- Paterson Parchment Co.'s modernization program
- U. S. paper companies' foreign expansions
- Epoxy, polyurethan and polyester adhesives
- Measurement of running felt openness

The Paper Industry

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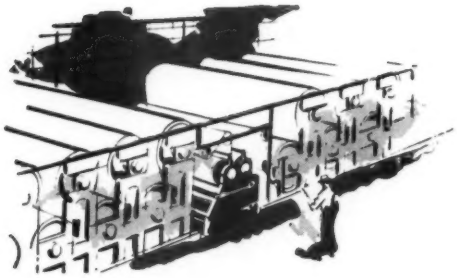

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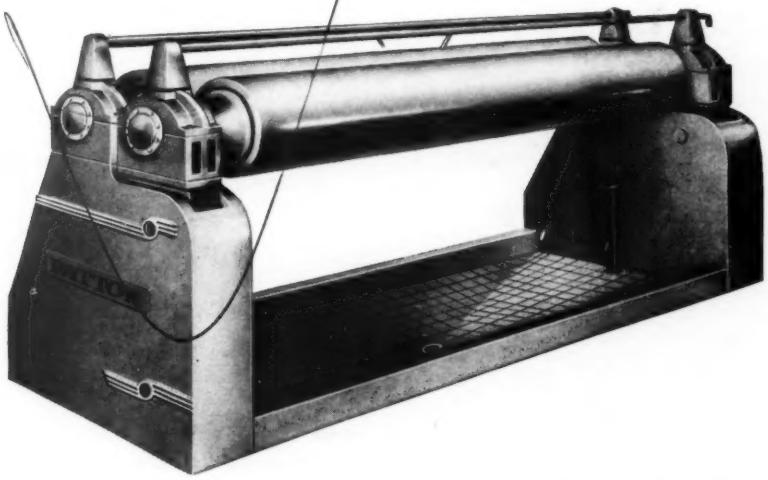

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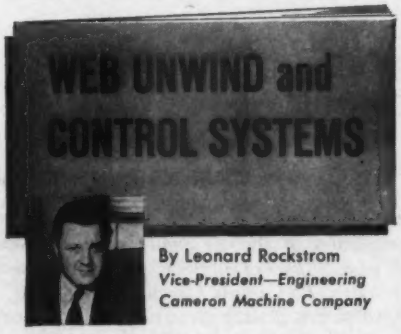

By Leonard Rockstrom
Vice-President—Engineering
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Construction will soon be underway for General Chemical's newest liquid aluminum sulfate producing plant. This time it's El Segundo (Los Angeles), California.

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The Paper Industry

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VOLUME 41 **NUMBER 7** **OCTOBER 1959**

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From our point of view..

U.S. paper companies expand into foreign countries

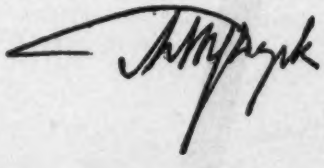
As pointed out by Warren Bullock in this issue, the U. S. pulp and paper industry has definitely entered a third stage of development, i.e., the investment of capital for the erection of mills in foreign countries. According to the author, such investments over the last two years alone have amounted to some $100,000,000.

This trend, stemming from an increased interest in foreign markets, reflects a strong confidence in the future of a rapidly expanding market for paper products — a confidence that can hardly be minimized when one considers the exceedingly low per capita paper consumption in many countries when compared to that of the U.S.A.

The paper horizon is widening rapidly, in direct relationship with the progress of world civilization. Also in direct relationship with the widening paper horizon is the sudden acceleration shown by U. S. companies in foreign plant construction. Not too many decades ago, new plant construction proceeded largely on a regional scale. This was soon followed by a trend on the part of large companies to erect mills on a national scale, and now we are witnessing a decided interest by many companies to expand even far beyond the borders of the U.S.A.

While the establishment of the strong European Common Market seems to have triggered this sudden activity in foreign mill expansion, signs that developments were bound to accelerate in this direction became apparent over a number of years when various pulp, paper and paperboard companies began to establish their own export and foreign trade departments to handle their overseas shipments. It then became evident that the pulp and paper industry had grown up and was no longer content to use the overseas markets with a view to getting rid of periodical surpluses only.

It augurs well for the success of the companies involved that most of these expansions were preceded by a period of thorough planning and comprehensive study of local markets, available production facilities, availability of raw materials, and the many problems that are different from those encountered in the U.S.A. A thorough investigation of all these problems is essential to decide on a most advantageous location of the mill and on its designed production capacity, as well as to assure the success of its operation.



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S. Stuart Engle

S. Stuart Engle,
Chief Designer

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❶ **FIRST STEP IN ALBANY FELT EFFICIENCY SURVEY** is discussion of aims and operating problems by Superintendent and Albany Felt Sales Engineer, with all pertinent data recorded.

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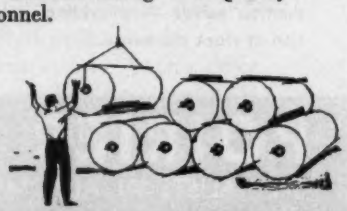

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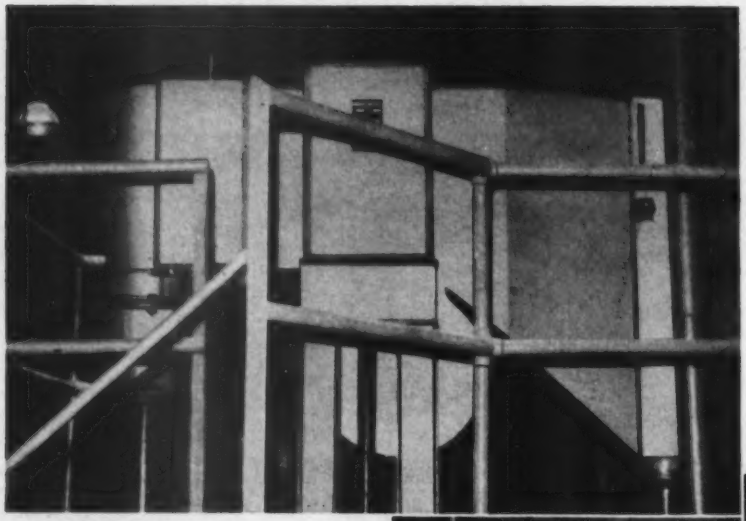

it regulates VOLUME of stock discharged to maintain BASIS WEIGHT TO WITHIN ?% plus or minus even when stock becomes too light to be controlled by dilution.

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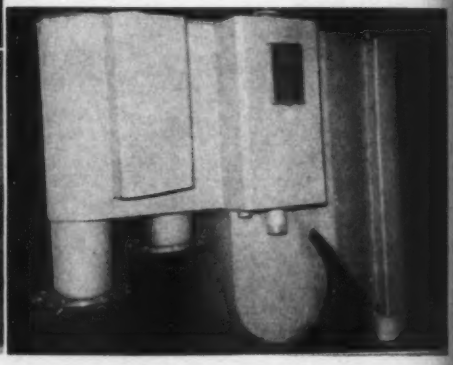

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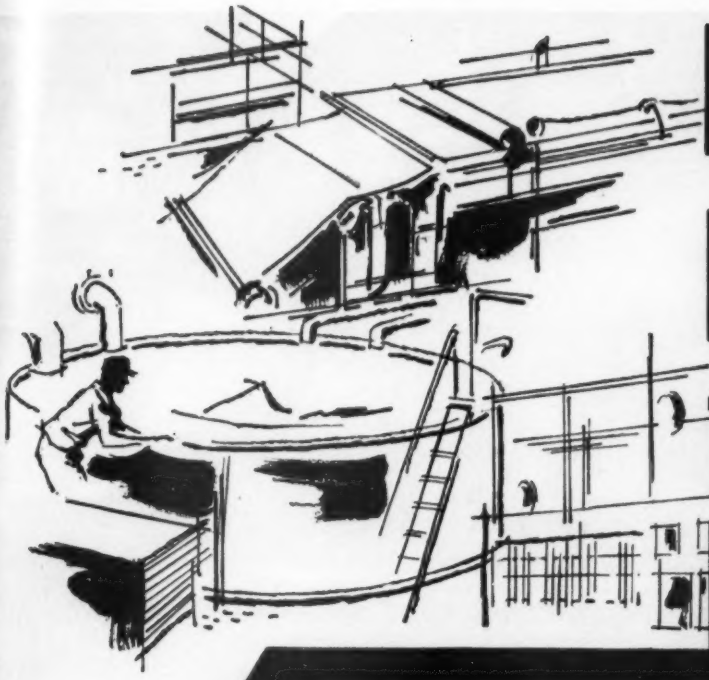

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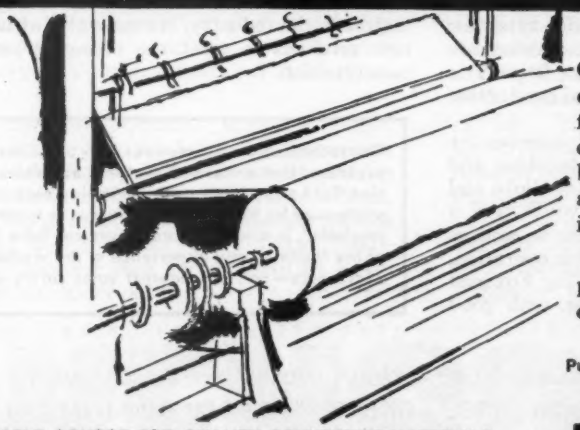

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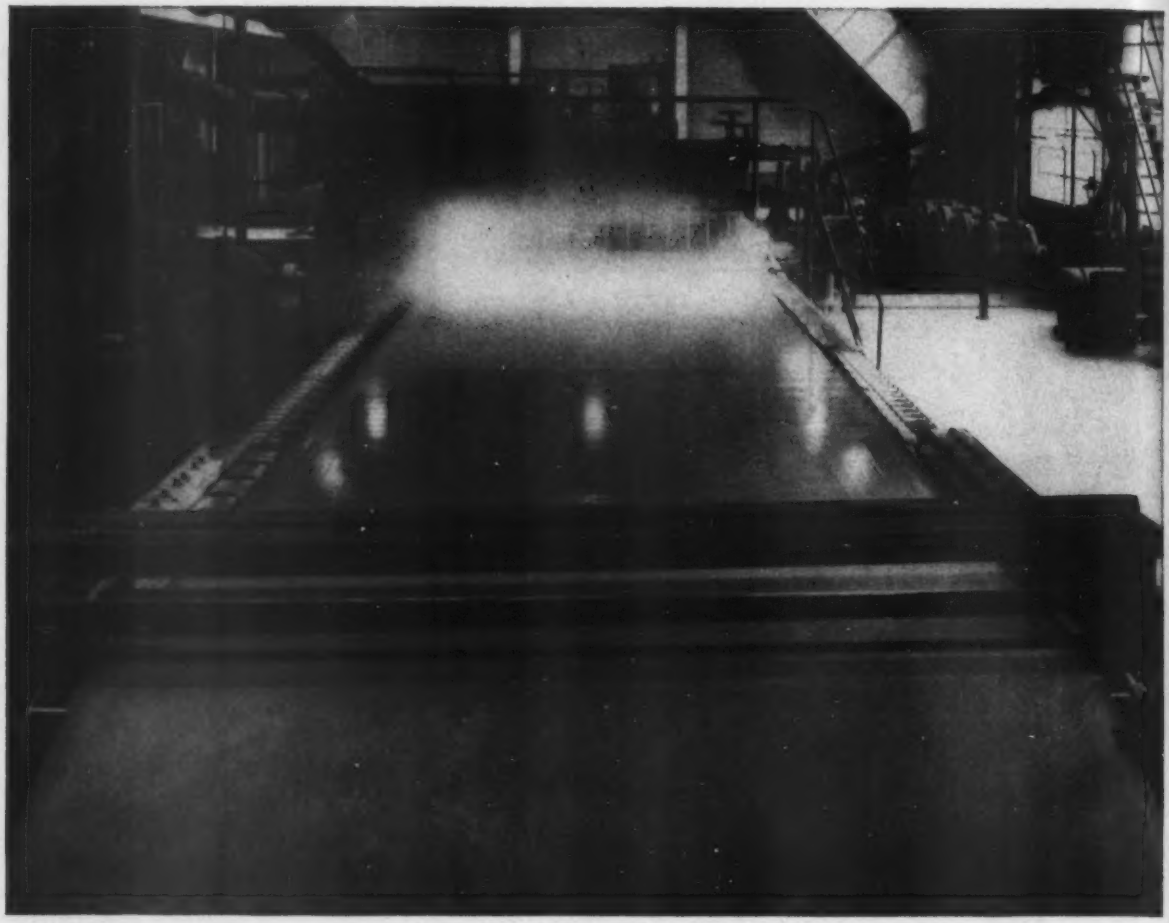

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Feature articles

Paterson Parchment Paper Co.'s modernization program

JOSEPH DRAGONETTI

▶ Paterson Parchment's $500,000 modernization program involves improvements of the four fourdriniers and installation of new auxiliary equipment in the machine room and finishing area.

BETTER SERVICE to its customers, more economical production and greater efficiency are among the objectives of the current expansion and modernization program at the Paterson Parchment Paper Company, Bristol, Pennsylvania. Cost of this program is estimated at a half a million dollars.

The mechanical improvements completed, underway or planned spotlight the need for better methods to offset rising costs in the paper industry.

Paterson's program is especially significant because it is in the midst of a higher demand for its growing list of products. It serves also to highlight plans for the observance in 1960 of the company's 75th anniversary.

Among the projects recently completed is a new custom-built chemical treating machine which will increase even further the quality of existing products, as well as permitting the production of new products. This machine was designed by Paterson engineers and constructed by the company's own craftsmen at a cost of $70,000 to meet the demands of Paterson finishing and converting operations. Previous equipment had limitations in special treatment operations.

The new machine made largely of stainless steel was necessary because of the increased demand for a great variety of Paterson custom-made papers and the particular demand for industrial type papers, which require special surface treatments.

Modernization of fourdriniers

Major equipment in the Paterson mill includes four fourdrinier paper machines. The newest one is about 10 years old.

Extensive modernization for greater production marks the approach to this phase of the expansion program. All of the paper making equipment can now produce about 155,000 lbs. of paper in 24 hr. The mill operates three shifts. A number of improvements in the machines have been made, are currently in the works or in the planning stage.

Ernest R. Leonhard
President, Paterson Parchment Company

Extensive alterations are being made on the No. 1 paper machine which has a 100-in. wide wire. Costs have not yet been revealed because the project is not completed. Among the highlights of this modernization are more suction boxes and the installation of a lump breaker roll together with other minor changes. Improvements are expected to increase production by 10 to 15 per cent.

Material has been ordered for a new suction press for the No. 2 paper machine. Also to be added are suction boxes and additional drying capacity. This improvement will cost about $62,000.

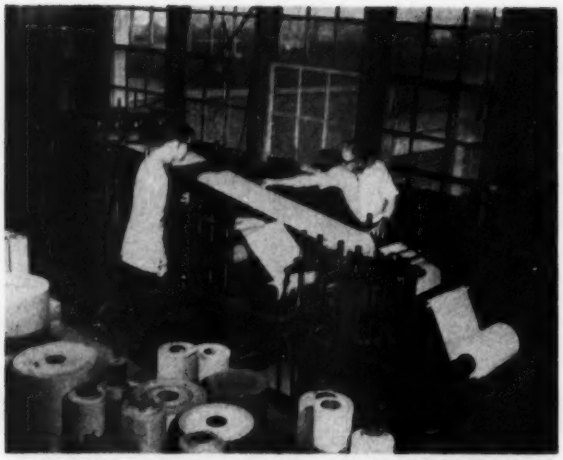
Improvements are in the planning stage for the No. 3 and No. 4 machines.

Two new Hi-Lo pulpers

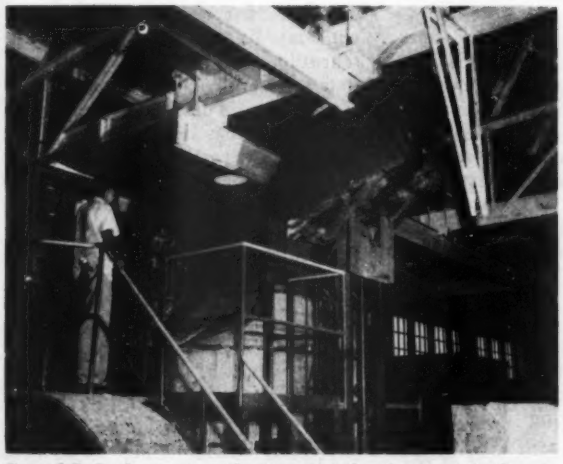
The company recently ordered two Hi-Lo pulpers of stainless steel construction. The whole installation requires an expenditure of $100,000. One already has been installed.

Cleaner stock and better fiberizing

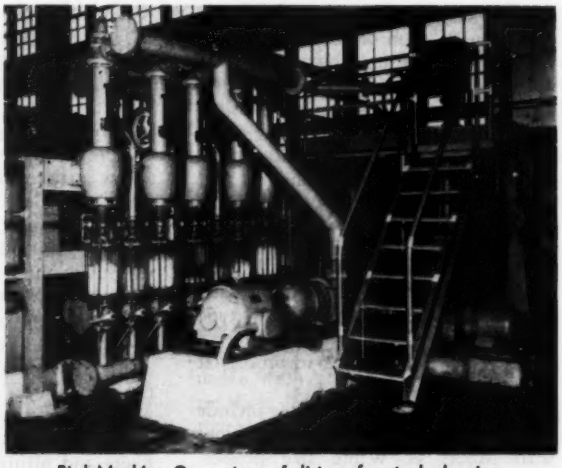
Opening ceremony, left to right: H. Harmsen, asst. v.p., mfg.; H. J. Kendall, sec. & asst. treasurer; K. Dammann, v.p., mfg.; E. R. Leonard, president; J. R. Dufford, v.p., ind. rel.; and A. L. Smith, v.p., sales.



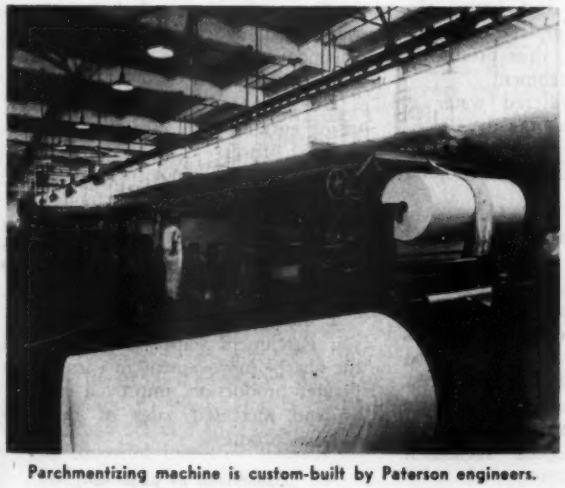
Experimental coater located in the Product Development Dept. testing laboratory. William J. London, left, director of Product Development examines a roll of coated parchment.



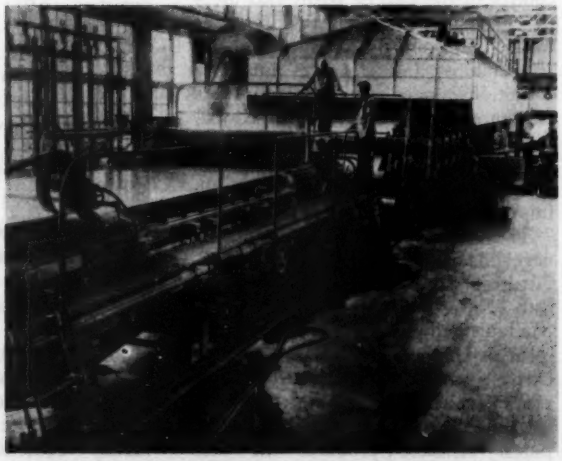
One of E. D. Jones new pulpers equipped with automatic dumper.



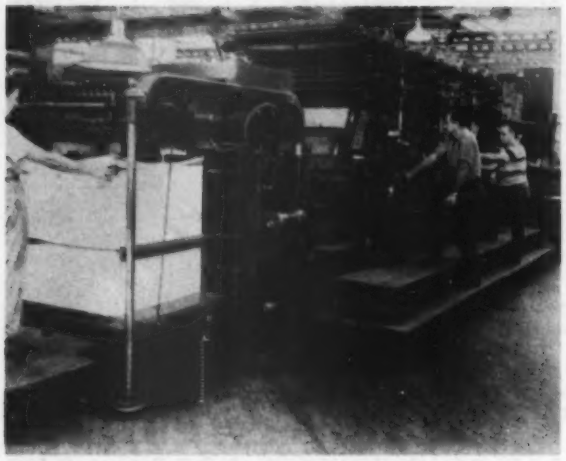
Bird Machine Co. system of dirtecs for stock cleaning.



Parchmentizing machine is custom-built by Paterson engineers.



One of the four Rice Barton fourdriniers undergoing modernization.



Harris four-color, roll-feed offset press.

Polar guillotine cutter features an automatic spacer.

of raw materials are among the end results of this equipment, purchased from E. D. Jones, Pittsfield, Mass.

The installation of the new pulpers is done by Paterson's own men. The mill has a top-notch engineering and technical staff. This makes possible the designing and building of much of the mill's own special equipment in addition to installing standard machines.

The parchmentizing process

There are five custom-built machines in the parchmentizing department. They have conventional type dryers. Three of the machines have as much as 700 ft. of paper in process at any given moment.

Modernization plans here include equipping of two of the machines with Moore & White size presses. Two of the existing dryers will also be equipped with Stamms flash-dry equipment.

This allows for better moisture control in the papers. Many end users of Paterson products require controlled moisture to conform to the temperature and relative humidity conditions under which these papers are converted or otherwise processed.

Paterson was the first mill to produce vegetable parchment in the United States and has continuously improved the parchmentizing process.

The first step in the production of vegetable parchment is that of manufacturing the base paper called waterleaf. The second process is that of parchmentizing.

In parchmentizing it is necessary to exercise great care in the selection of raw materials entering into the waterleaf. Experience has shown that the purest cellulose produces the best results.

Waterleaf differs from most papers in that it does not contain sizing or loading materials.

For many years cotton rags constituted the principal raw material for waterleaf manufacture. However, with the advent of high alpha cellulose type pulps, this material almost completely supplanted cotton rags as a raw material for waterleaf production.

The refining operations are accurately controlled and measured by various methods that have been found to produce waterleaf of high quality for parchmentizing.

When waterleaf is exposed to the action of sulfuric acid, the fibers of the paper are attacked by the acid which forms a coating or film of gelatinous cellulose covering the fibers and filling the interstices of the sheet.

This interlocks the fibers and produces a parchment with permanent high wet-strength and grease-resisting qualities. After the acid baths, the acid in the web is completely neutralized and washed out, thus producing a pure and neutral parchment.

Highly purified, filtered water is used in completely washing the parchment. Paterson has its own filtering plant capable of purifying 9,000,000 gal. a day.

Other mill facilities and improvements

The Paterson mill facilities include one of the most complete acid reclaiming plants in the country. It was designed and built by the Paterson staff. Equipment includes four pressure concentrators and one vacuum type unit. The capacity is approximately 250,000 lb. of reclaimed strong acid per day.

The mill has a complete converting and printing department. Equipment includes: five sheeters; seven rewinders; six guillotine cutters; one four-color, roll-type offset press; and four roll-to-roll letterpresses.

A modern Polar cutter with automatic spacer has been installed in the converting department. This machine makes possible automatic cutting to pre-printed marks, without presetting, up to $\pm$ 0.1 mm.

A photo-electric cell fitted to the frame of the machine takes each line, running parallel to the cuttingline, no matter how small it may be, stops the advance backgauge and releases the cut. The cut will always be made on the front edge of the pre-printed line.

For better quality control, the air-conditioning system in the converting and printing departments was replaced with a more efficient unit. Temperature is maintained at 72° F. and relative humidity at 50 per cent.

A new fluorescent lighting system was installed in the converting department to improve inspection techniques.

Other improvements include a new office entrance, an escalator and additional offices.

The wise judgment in such a comprehensive expansion and modernization program is already reflected in increased demand for Paterson products, increased production and increased sales and profits.

E. R. Leonhard, president of Paterson Parchment Paper Co., attributed the sharp improvement in earnings to greater production, improved efficiency and increased sales of new industrial products.

(Continued on page 464)

Foreign expansion investments of U.S. paper companies

WARREN B. BULLOCK

The U. S. pulp and paper industry has entered a new cycle of industrial development — that of erecting pulp and paper mills in foreign countries.

ORBITING into the space of future potential world consumption of paper, the United States paper industry is spending many millions of dollars for the building of pulp and paper mills far beyond the boundaries of the fifty states. It is no longer just a national industry, or even one of hemispheric scope. It is literally world-wide, with its operations extending from Europe to Australia, from Latin-America to Israel and South Africa.

Future possibilities cannot be charted or even estimated. Inasmuch as the United States per capita consumption of paper and paperboard ballooned in 35 years from 143 lb. to the present 434 lb., the future world market becomes astronomical in size when it is realized that the present world consumption is less than 50 lb. per capita.

The rate of development abroad is dependent only on the speed with which backward nations catch up with civilization. The use of American dollars to build paper mills abroad may act as a spur to developments financed by other nations or by native capital, or both.

The progress of future developments can be appreciated when it is remembered that it has taken the United States paper industry only 35 years to pass through two cycles of economic life into a third — the most promising of all. First there was the period when the industry was in dire financial straits due to foreign competition. During the second cycle, American mills, instead of being plagued with competition from abroad, turned to an export market to ship American products across the seas. The third cycle, the spiraling expansion of the industry into the financing of mills abroad, is now merely getting under way.

Steps that led to the industrial development abroad

To appreciate the significance of the United States expansion into a world wide industry, it is important to review briefly the earlier history of the phases which preceded the third cycle of industrial development.

In the early years after World War I imports of foreign papers were in such volume and at such low prices that the United States mills were smothered by the competition. They were being forced to meet prices at which foreign papers were quoted, even if it were necessary to make sales at a loss. In 1924 the industry was suffering to such an extent from this inundation of low priced imports that Joseph L. Fearing, vice president of International Paper Co., then president of the Salesmen's Association of the Pulp & Paper Industry, and George K. Gibson of Mosinee Paper Mills, a salesman who combined selling ability with a broad economic talent, brought about the formation of the Import Committee of the American Paper Industry. As a result, the industry expended some $2,000,000 in combatting unfair foreign competition. In ten years the volume of imports, exclusive of newsprint, was cut in half.

With the first phase of the cycle under control, the second phase saw the opening of a sustained campaign to develop export markets for United States paper. Too great emphasis cannot be placed on the im-

portance of this field with its volume currently comprising 750,000 tons of paper and paperboard a year, or nearly 3 per cent of the industry's total output. Today the industry has an Export Committee, composed of export managers of the major paper companies, carrying on a continuous study of the export opportunities in foreign lands.

Originally the export activities were confined to a limited number of companies which operated in both the import and export field, buying paper from domestic mills to sell at a profit abroad. Later a cooperative export company was formed by a few paper companies with a staff of specialists to market their combined products abroad. Today there is a trade association to concentrate efforts for the marketing of the pulp, paper and paperboard output of the participating manufacturers.

The larger paper companies now have well organized export departments with agencies abroad. Exports are no longer considered as a means of disposing of surplus production, but as a major definite field for promotional efforts. For instance, American Paper Exports Inc., is a separate division of International Paper Co. to handle export sales in Latin-America, Europe, South Africa and the Far East.

While the industry's export has developed largely within the Western Hemisphere, the picture is by no means confined to this area. Out of an approximate total of $220,000,000 in exports in a typical current year, Europe took nearly $40,000,000 in paper, paperboard and paper products, the Far East took $30,000,000 and Africa's figure was $10,000,000. The grades exported covered the entire range of paper and paperboard, but an exceedingly large proportion was in kraft types from southern pine. Linerboard exports alone in 1957 totaled over 240,000 tons, and kraft paper nearly 40,000 tons.

Paper and board exports to Latin-America

The possibilities of markets in Latin-America are incalculable, even without allowance for a growth in population. Cuba leads the list in per capita consumption with 50 lb. per capita. From Cuba's 50 lb. per capita the consumption ranges down to 42 lb. in Argentina, 20 lb. in Brazil and 1 lb. in Haiti.

United States exports to Latin-America have had a phenomenal rise as shown by the following figures: In South America in twenty years total imports of paper and paperboard from all countries increased 20 per cent, but United States shipments leaped 425 per cent, taking over much of the tonnage formerly shipped from Europe. In the Mexico-Central American area total paper and paperboard imports increased 82 per cent, but the United States increased its shipments as much as 200 per cent in some countries.

In general, the Western Hemisphere provided a total export market of over a million tons in 1956, of which the United States furnished about half, or a value of $150,000,000. In every one of the three Latin-American areas, trends indicate that total consumption has increased faster than the population. The demand in Latin-America is growing at a faster rate than in the United States. It is against this background of increasing export trade that the industry is turning to the possibility of expanding its foreign production.

U. S. paper mills in foreign countries

From this second cycle of increasing export trade it was a short step into the third phase of this industrial development, the spending of millions of American dollars to build paper mills abroad.

Many companies may be planning such expansion in other nations, and this review names only some of the enterprises which have been publicly announced. No figures have been included of funds allocated to Canada. Naturally the companies are not disclosing all the details of their operations, but the last two years have seen allocations which can hardly fall short of $100,000,000.

W. R. Grace & Co. is one of the leaders in the entry into Latin-America. Much of its plans involve the utilization of bagasse, the waste product of sugar cane, once chiefly used as fuel to operate the crushing machinery in the sugar mills. This company, originally best known as a shipping company as well as a banking institution, has a rapidly developing department organized as a subsidiary company. Wentworth Brown, an experienced paper manufacturer, has been named as president of this subsidiary, the Grace Paper Co. Peru has been an especially important field for the Grace paper operations, specializing in bagasse products, but the importance of Puerto Rico and other areas is also being recognized for future operations, not only with bagasse, as a raw material, but also with eucalyptus and other tropical timbers. At the last annual meeting $50 million were budgeted for use in this field. Grace has other interest in Cuba, Colombia, and Brazil. An $8,200,000 paper mill in Puerto Rico began operations in early 1959 and ground has been broken for an $11,000,000 paper and pulp mill in Cali, Colombia, to begin operations late in 1960.

Champion Paper & Fibre Co. has entered the Brazilian field. How much financing was involved is not made public, but the pulp mill had an initial capacity of 150 tons per day of bleached kraft pulp made from eucalyptus. A mill of this capacity built in the United States would cost $70,000 per ton of daily output, or a total of $11,000,000. Henry W. Rigby, vice-president of Champion for corporate development, had this to say of the project:

"The decision to manufacture pulp in Brazil was based on several economic factors, the most compelling of which was that Brazil needs a domestic source of high quality wood pulp. A fully integrated kraft operation at Mogi Guassu, State of Sao Paulo, is the first of its type in Brazil. The mill has a complete chemical recovery system and is self-sufficient with respect to steam and electrical power and will manufacture its own chlorine and caustic".

The project was financed in part by a loan from the Brazilian Development Bank. Champion is continuing studies with a view to further development in the Latin-American field. A unique feature of the Brazilian project was that, under M. C. Walsh as president of the Brazilian company, a corps of experts was trained in this country for operation of the new mill, consisting of fifteen engineers, technicians and semi-skilled workers. These men and their families, from the Champion mill at Canton, N.C., were instructed in the history, language and customs of the Brazilians by a foreign student adviser from the Case Institute of Technology, to make sure that there would be no misunderstandings for the one to two years that these technicians will be training Brazilian replacements.

Perkins & Goodwin is another company which, in cooperation with European interests, has various Latin-American projects in contemplation; though no specific announcements have been made of the locations of their mills, Brazil is a highly possible location.

Olin Mathieson, already deeply involved in operation of United States mills in the paper field, is

another company with its eyes on Brazil. It has formed a Brazilian subsidiary, Olinkraft S. A. Cellulosa e Papel, to produce kraft pulp and paper from local woods. This project involves $4,400,000, of which Olin Mathieson provides $2,200,000, the balance to come from Brazilian sources and the International Finance Corp.

Kimberly-Clark has gone extensively into various foreign fields from Mexico to South Africa as well as in Europe. The company has two affiliates in Mexico but the amount involved in their purchase has not been officially announced. A West Germany affiliate, Zellwatte g.m.b.h., started converting cleansing tissues over a year and a half ago. Other subsidiaries are operating in England, France, Australia and South Africa. The addition of another cellulose wadding machine in the English plant is already budgeted, and an initial wadding machine for South Africa is planned for this year. All of these enterprises are separate from the company's wide-flung operations in Canada with its joint ownership of Spruce Falls newsprint mill and its own manufacturing branches for tissue specialties. Its latest projected investment involves several million dollars for participation in a planned erection and operation of a pulp mill in Nova Scotia.

St. Regis, in addition to its own widely scattered foreign interests, is purchasing a twenty per cent interest in a Brazilian paper mill, Companhia Industrias Brasileiras Portala, S. A., with a mill in the State of Pernambuco which makes 1,500 tons monthly. St. Regis through this affiliation will secure the raw material for its present multiwall bag plants in that region. St. Regis is already a world-wide organization through its ownership or licensing of plants to produce multiwall bags in all parts of the world.

International Paper Co., having largely concentrated its operations in the United States and Canada, has not overlooked other possible fields for cultivation. A partnership has been consumated in West Germany with the Heinrich Shipping Container Co. which has plants in various German cities, International having a 50 per cent interest in the reorganized company. International is also going into Venezuela where a new company has been formed to manufacture milk container blanks, formerly shipped from mills in the United States. The new company will produce the blanks in Caracas from board shipped from International's United States mills.

Another U. S. Latin-American investment is the participation by the Gottesman interests in the expansion of a paperboard mill in Guatemala.

Lily-Tulip Corp. has made a cooperative arrangement with Kia-ora Industries of Victoria, Australia, to produce and market a comprehensive line of Lily-Tulip cups and containers. Lily-Tulip Overseas Ltd., is the organization under which the American company is expanding its operations from England and New Zealand to still another tempting area for investment.

Scott Paper is another company that is interested in Australia as well as in other foreign regions. Scott has combined with the great Bowater interests in the formation of Bowater-Scott, Australia, for the manufacture of tissue paper near Melbourne. Scott has negotiated another affiliation with Bowater in the formation of an English affiliate, Bowater-Scott Corp., and this English affiliate has formed a secondary corporation, Papeteries de Belgique, to convert paper stock supplied by Bowater-Scott into finished tissue products for Holland, Belgium, Luxembourg, Northern France and West Germany. The dollar investment in Belgium is not spelled out but that in Australia is given as approximately $4 million.

South Africa and Israel are other areas where United States money is being expended for paper and paperboard mill construction. Masonite has a building board mill in South Africa which does not confine its sales to the local market but in addition ships material to the United States for distribution through Masonite's deal affiliates.

American-Israeli Paper Mills is headed by Joseph Mazer, one of the important figures in the Hudson Pulp & Paper Co. There is no official affiliation between the American and Israeli companies, but American capital has been offered an opportunity to participate to the extent of $6 million in the expansion of the existing Palestine mill. Some Israeli board is already being shipped to the United States for building purposes.

United States personnel and money will be involved in the planned establishment of an esparto mill to make book and similar papers from esparto grass. The mill will be located in Tunis, the center of the esparto grass raising region of North Africa. A United States concern is said to have been awarded the contract to build the mill, which will have a pulp capacity of 80 tons per day, for the Societe National Tunisienne de Cellulosa, a Parisian corporation. The Tunisian Government will finance half of the cost, with European and United States capital furnishing the balance. The Development Loan Fund at Washington is providing $6,250,000 credit for the promoters.

Crown Zellerbach Corp. has formed a new subsidiary, Crown Zellerbach Corp. International with G. J. Ticoulat, vice-president of the parent corporation, as president of the subsidiary. No announcement is made of the company's plans except that the subsidiary was formed to develop facilities outside North America.

While United States private capital is developing paper mills abroad, the United States Government is financing industrial development in various European nations. Finland, which after World War II was allocated $40 million for the expansion of its pulp and paper industry, has just been granted another loan of $37 million from the World Bank for the improvement or enlargement of nine mills. Other similar funds have been allocated to Australia's pulp and paper industry, over $7 million having recently been authorized as a loan from the World Bank in addition to United States funds provided in earlier years. Much of the production from Finland and Austria is being shipped to the United States.

With Scott, International and Kimberly-Clark (which controls a great French cigarette paper mill) investing in paper production within the boundaries of the European Economic Community, these companies are definitely ready to protect themselves against any restrictive developments. The European market, over-all, is not one to be underestimated; for in 1957, exports of pulp, paper, paperboard and paper products reached a value of $90 million.

One thing is certain—a tremendous expansion of production of pulp and paper abroad. Whether the foreign development is financed with United States capital or by the Governments or capitalists of the nations where such expansion is inevitable, remains to be seen. In any event, it will be American technique and know-how which will dominate the world development in the paper and pulp field.

Adhesives in the paper industry

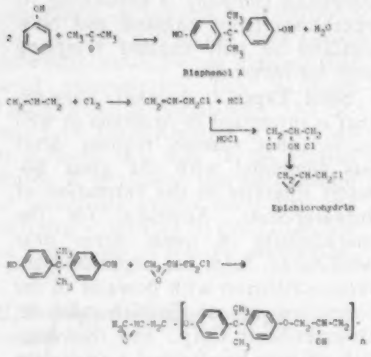
Part VII—Synthetic resin adhesives—epoxy, polyurethan and polyester resins

ALTHOUGH THE EPOXY resins are relative newcomers in the field of synthetic plastics, they have had a marked effect on the adhesives industry. Structural adhesive formulators in particular have benefited from the epoxy resins which lend themselves to the formulation of metal to metal adhesives with good low and high temperature properties and high degree of impact, resilience and flexibility. The epoxy resins are valuable as adhesives for honeycomb structures because of the high strength inherent in them even when the glue line is very small in area. In addition to bonding metals, the epoxy resins provide excellent adhesives for glass, wood, paper, plastic films and molded plastics. Some epoxy adhesives are even recommended for bonding hard-to-glue surfaces like "Bakelite."

The epoxy resins adhere well to glass, for which reason glass fibers and glass cloth are good reinforcing media for structural applications such as boats, fishing rods, pipe and related items. With proper fillers such as alumina, the epoxy resins provide excellent solders which may replace the metallic solders used to bond metal and to repair metal surfaces like dented automobile fenders.

The epoxy resins are very useful for protective coatings in part because of their good adhesive characteristics. Actually, the largest use for these resins is in decorative and protective paints. Use as adhesives, however, is growing steadily.

Chemically, the epoxy resins are condensation products of bisphenol A and epichlorohydrin. Bisphenol A in turn, is made by condensing two moles of phenol with one mole of acetone. Epichlorohydrin is based on propylene which is treated with chlorine to obtain allyl chloride. This compound, in turn, is treated with hypochlorous acid to obtain glycerol dichlorohydrin which, under the influence of lime, yields epichlorohydrin. The equations demonstrating these reactions are as follows:



As these equations indicate, the epoxy resins obtained are named from the epoxy end groups which make the resin highly reactive. Actually, the resin is not useful alone, but must be cured through the epoxy groups in order to obtain useful adhesives. Curing may be carried out in a variety of ways. Amine reagents are commonly used such as ethylene diamine, diethylene triamine and phenylene diamine. Amine containing resins such as the polyamide resins are also very useful coreactants for the epoxy resins. Thiokol resins are used with the epoxy resins where rubbery-type compositions are desired, particularly for use as putties and caulking compounds. Acid curing agents such as phthalic anhydride and pyromellitic anhydride provide products with good electrical properties.

Polyurethan resins

Like the epoxy resins, the polyurethans are relative newcomers to the plastics industry. Polyurethan resins result when diisocyanates are reacted with hydroxyl containing materials such as polyesters or polyethers. The simple reaction between an isocyanate group and a hydroxyl group to give a urethan may be indicated by the following equation.

$$RNCO + R'OH \rightarrow RNHCOOR'$$

When this reaction is applied to difunctional molecules such as diisocyanates and diols, resins result with the recurring units indicated in the following equation.

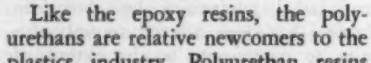
$$OCN\text{-}R\text{-}HCO + HO\text{-}R'\text{-}OH \rightarrow OCN\text{-}[R\text{-}NHCOOR']_n\text{-}OH$$

The diisocyanates themselves are prepared by reacting phosgene with the appropriate amines, as indicated in the following equation.

The polyurethan adhesives are effective for wood as well as for metal. They have also been recommended for bonding rubber and other elastomeric substrates. Because of their highly polar nature, they have excellent adhesion to nonporous as well as porous surfaces. Thus far, however, the polyurethan resins have not found any application in the packaging industry.

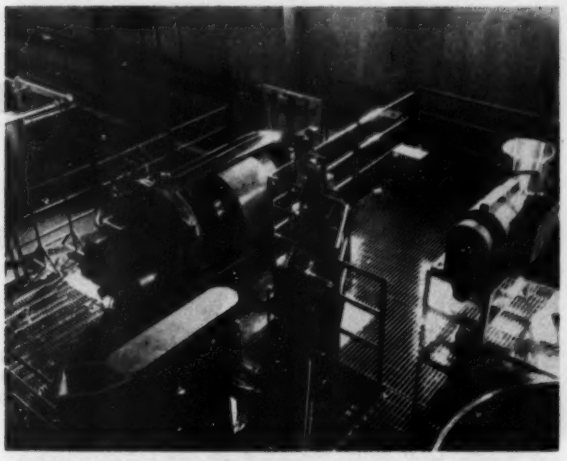
Polyester resins

The term polyester applies to a variety of resins of interest to the adhesives formulator. The polyesters produced in largest quantity by far are the alkyd resins. An alkyd resin in general is one which results from the condensation of a dibasic acid with a dihydric alcohol to obtain a recurring polymer unit characterized by an ester group.



The so-called modified alkyd resins result when fatty acids are included in the formulation. Such alkyds are widely used in the protective coatings industry and are based largely on unsaturated fatty acids, phthalic anhydride and glycerol or pentaerythritol. Maleic anhydride is sometimes used instead of or together with phthalic anhydride.

(Continued on page 466)



Views of Consolidated's pilot plant equipped with complete pulping facilities.

Research guides production at Consolidated Paper Corp.

R. E. SHOOK
Pulp and Paper Div.
Sprout, Waldron & Co. Inc.

WHEN CONSOLIDATED Paper Corporation opened its new $1 million Research Center at Grand' Mere, Quebec, there may have been some who wondered whether or not this was a wise investment. Consolidated's name has long been associated with research. Among the pioneering work credited to this company's research are: development of centrifugal cleaning equipment (Vortrap) for removal of dirt from papermaking stock; the developmnt of equipment for the simultaneous removal of gas and dirt (Vor-vac and Vorject), and the production of a new splicing material now widely in use by pulp and paper companies. The company has also done a great deal of work on groundwood pitch control and is responsible for an important method of control involving the use of polyphosphates.

During the early 30's, Consolidated's Research Department furthered developments involving sulfite waste liquor. A plant was built at the Belgo Division to produce the dried solids in powder form. This product, known as Copacite, was manufactured and sold for more than 20 years, until in 1957 the Belgo plant was dismantled to make way for the new high yield sulfite pulping operation. Continued research has led to many uses for sulfite waste liquor solids in a variety of applications.

With this tremendous background of development and performance, it was natural to ask why a new Research Center was needed. The new Center comprises a three-story laboratory and office building with 25,000 sq. ft. of floor space connected by a passageway to a pilot plant area of 10,000 sq. ft. The main building contains chemical and engineering laboratories, complete pulp and paper testing laboratories, photographic laboratories, a modern technical library, a lecture theater capable of seating about 70 people, and offices for research and administration personnel. All of this represents improved facilities which were not available in the old research laboratory.

Well-equipped pilot plant

The real reason for the new laboratory lies in the adjoining pilot plant which reflects great strides in forward thinking. Consolidated's pilot plant consists of versatile and complete pulping facilities featuring a unique expandable digester permitting two, seven, twelve and seventeen cubic foot cooks to be made and blown irrespective of the yield. Auxiliary pulping equipment includes acid making, liquor recovery, chemical injection and metering systems. A complete portable instrument panel is used for making program-controlled cooks and for continuous pH measurements within the digester. Refining is done on a 500-hp "Sprout" with a portable conveyor-belt feeder, a high speed Rietz disintegrator, two sizes of Vorject cleaners, a small Biffar rotary screen and a portable Eimco rotary

(Continued on page 466)

Multiwall bag manufacture at St. Regis Paper Co.

Part IV

WALTER J. MACEY
Director of Adhesives
St. Regis Paper Co.

and

EDWARD H. HILL
Technical Representative to the Paper Industry
Corn Products Sales Co.

▶ Handling of paper rolls through the tuber and bottomer; cross pasting, tube formation; folding and curing operations.

MOST of the paper used for bag making at the Franklin plant is natural unbleached kraft, with a basis weight of 40 to 60 lb. or sometimes higher. However, other special kraft papers are used for making certain types of bags. These special papers include wet strength kraft containing 2 per cent resin, bleached wet strength kraft, asphalt laminated kraft, waxed kraft, clay coated kraft, polyethylene coated kraft, and many colored sheets of kraft.

Rolls of kraft paper going to the new tuber at Franklin weigh approximately 1,800 lb. of roll. The rolls are each 38 in. wide, and 40 to 50 in. in diameter. A shaft is inserted in each roll, and then it is lifted onto its roll stand by a 2-ton hoist on an overhead rail. The hoist is manually controlled by a switch box. The operator flies in a new roll while the tuber is running by simultaneously cutting off the old roll and splicing on paper from the new one.

Most multiwall bags have four or five walls or plies, and on the universal tuber at Franklin the roll of paper for each ply is on a separate roll stand. Paper for the inner wall is on the inside roll stand, the one closest to the machine. The inner plies are on the next roll stands, and the outside ply, which usually bears printing, is on the roll stand farthest from the machine.

Coming together at the inside roll stand, the plies enter the automatic edge aligner. Its five power units, operated hydraulically and pneumatically, align the web as it moves from the driven roll stand into the perforator.

As the web moves through the perforator at speeds of 700 to 1,000 ft. per min., all plies are perforated and slit. This is done by rotating knives, one for each ply. The knives are mounted one above the other. They use a pierce perforating method. Depth of penetration can be closely controlled, and the arrangement of the knives can be changed for different type tubes. The perforator operates in time. Distance between perforations determines tub length, while the slitting action determines valve size.

Between the perforator and the cross paster, the moving plies pass through the vertical compensating roll assembly. It consists of five idler rolls mounted one above the other. The rolls can be moved vertically by a single motorized adjustment. This compensating roll assembly operates simultaneously on each ply to vary the distance of travel after perforation to the point of cross pasting. Thus the spot pasting patterns can be set in the proper relation to the perforations as required by tube length changes. A photoelectric control system, with scanning head and selector switch, also registers the perforations with the printing. The plies, separated once more, go next to the cross paster, where paste is applied to each ply.

Cross pasting

Cross pasting is highly important in the manufacture of stepped-end bags. Placement of the spots is critical, especially for the strength of the corner opposite the valve in the finished bag. When bags are filled pneumatically, it is that corner which gets blasted by the air stream laden with the filling material. The corner must be strong enough to withstand this punishment.

At the cross paster, spot paste is applied to hold the inner plies together at each end. Spots on the rotating pads apply the adhesive by stippling. Each pad is set or adjusted to its stainless steel glue roll and transfer roll to get just enough adhesive on the spots. The paste rolls and transfer rolls apply paste from the pans to the pads. There is a separate

E. H. Hill (Corn Products), W. J. Macey and L. J. Sandford (St. Regis) examine moving web of plies.

Bottom paste is fed to the Burroughs bottomer from a 55-gal. drum by a pneumatically operated device.

cross paste pan, each holding 4 or 5 gal. for each ply. Spot paste is pumped to the pans by a small gear pump that also returns overflow to the system.

Paste film can be conveniently adjusted and controlled. Improvements in the cross paster make it possible to set the speed of the paste pads to correspond with the speed of the paper. Speeds of the paste rolls are kept as low as possible to attain higher operating speeds without throwing glue. The roll that picks up the glue and transfers it to the second glue roll is driven by a separate gear head motor that can be adjusted to speeds from 3 to 10 rpm. Such low speeds are possible in the cross paster because of the small amount of paste actually transferred to the paper. The cross paster can be laterally adjusted, and registration is constantly maintained photoelectrically.

In the tubing operation, it is desirable that the perforating and cross pasting be accomplished at the same speed as the paper. This is done by the double vari-coupler, an adjustable transmission used to drive the perforator and the cross paster.

Entering the horizontal frame of the tuber, the plies come together again beyond the "Christmas tree" and are ready for seam pasting. The seam paste is used to hold the side edges of the paper plies in alignment and to make the lengthwise seam that seals the tube. It is applied just before the two sides of the moving web of paper are joined at the heel of the former.

Seam paste reaches the machine at 90°F. and a viscosity of 1,200 to 1,300 cps. It is pumped to the seam paste pot by a small auxiliary gear pump that also recirculates overflow. The seam paste wheels, one for each ply, pick up paste from the pot and apply it to the individual plies of paper. The pick-up roll and doctor roll are adjusted so that each wheel deposits an adhesive film 0.015 in. thick. The wheels are 3/16 in. wide, and the parallel glue seams are spaced 1¼ in. apart.

Tube formation

Following the application of the seam paste, the moving web is formed into a continuous multiple-plied tube. The two sides of the paper begin to come together at the heel of the former. Runners inside are adjusted for the required tube width, usually between 18½ and 21 in. Outside guide wheels on each side help to form a tight tube. All of these rubber guide wheels on both sides of the former table can be thrown off at once by a single lever. This same throw-off lever makes it possible to throw off gusset wheels and other tube forming accessories. However, while other types of tubes are made with gussets, those for stepped end bags usually are not gusseted.

Rubber draw rolls next draw the paper together to complete the forming of the tube and to flatten it out. These adjustable draw rolls are spring loaded.

A perforating head makes perforations in the moving tube at positions that will be under the valve in each finished bag. This is done to let displaced air escape as the bag is filled by its user.

The pull roll segment pulls the tube through the machine to the breaker bar. Striking the flattened moving tube sharply at each successive crosswise perforation, this bar snaps the paper apart to produce the individual tubes that will become bags.

Tubes are finally discharged by a system of belts and pulleys to a conveyor belt. This belt-type delivery system has a separate dc motor controlled by a main drive so that delivery speed can be preset to a constant minimum, half the full speed of the tuber itself or whatever other speed is wanted. Above this preset point, the speed of delivery increases directly with that of the tuber. With the tubing operation completed, the tubes go next to the bottomer.

Handling of tubes through the bottomer

Tubes are fed automatically into the Burroughs bottomer from both top and bottom piles in the double-deck feeder. As they reach the feed table, the tubes are registered at front and side against two chains with lugs. This aligns the tubes correctly for bottoming. Incorrectly fed tubes set off a microswitch that causes them to be deflected upward and discharged into a reject table. Another microswitch causes the glue wheel unit to lift if a tube is skipped, thus preventing paste application. Correctly fed tubes are picked up by twin gripper chains that carry them through the bottomer.

As the tubes come through the forward rollers, they are either slit or angle scored, depending on the type of bag. Stepped-end bags are angle scored, not slit. Next, the main creases

are put in the valve or top and the bottom simultaneously. Both angle scorer and main creaser are adjustable for different tube widths, valve and bottom sizes. All scoring and creasing are accomplished by locomotive action imparted by elliptical gears.

After the tubes have been angle scored and creased, the end flaps are lifted by runners until the flaps are vertical, and a pair of suction cups on each side of the machine pull open the ends of each tube. A series of aluminum openers, entering slowly and coming out quickly, completes this operation. After opening, corners are flattened by adjustable press rolls. The tubes are next scored for correct valve and bottom width. The adjustable scorers, which are synchronized, also operate by locomotive action. The tubes are now ready for the application of bottom paste.

Bottom paste seals the formed and creased bottom end of the tube, closing it and converting the tube into a bag. It is also used to seal the valve or top end of the bag and, on stepped-end bags, to secure the insert or sleeve to the flap at the valve corner.

The setting of the brass transfer and doctor rolls determines how much adhesive is picked up from each of the two pans and applied to the bag. The pans each hold 1½ to 2 gal. of paste. On the Burroughs bottomer at Franklin, paste is fed to the pans from a 55-gal. drum by a pneumatically operated device. At other St. Regis bag plants, it is pumped to the bottomers.

From the rolls, the bottom paste is transferred to the pads. These brass pads are of the ribbon type and are grooved. Paste goes to the long pads that seal the flaps at each end of the bag and also to the shorter ear or corner pads. Thickness of the adhesive film applied on the Burroughs bottomer varies with the type of paper and the basis weight of the paper used in the different component sheets or plies. On a regular conventional pasted cement bag, for example, the film would be 0.015 to 0.020 in. thick, while on a heavier bag it might be perhaps 0.025 in.

Following the application of bottom paste, the sleeve is inserted, the bottom and valve of each bag get their final folding, and the finished bags are discharged to the conditioning conveyor. Functioning as a tiny tuber, the insert or sleeve unit on the bottomer first makes an upper insert or sleeve, and then inserts it in the valve of each stepped-end bag. The sleeve unit is driven directly by the machine, and is timed 1:1 with every revolution of the machine.

Folding and curing operations

Seventy pound kraft is used at Franklin to make the upper inserts for stepped-end bags. Width of the sleeve depends on the valve width. It is 3⅝ in. for a 3¼ in. valve, but varies with the valve size, which ranges from 2¾ to 5½ in. The sleeve or insert must fit the valve.

The bags go next to the setter guides and then to the folding tunnels on each side of the machine. During final folding, guides fold the bottom and valve of each bag while it is held securely by the hold down chains and bars. This folding system functions effectively on all types of bags.

Entering the turnover press conveyor at the end of the bottomer, the bags are turned over with their pasted side down. They then travel 156 ft. through an overhead pressure or strap conveyor that presses on the bags. After the freshly pasted bottoms and valves have been kept under this pressure for approximately 30 min., long enough to insure a strong bond, the finished bags are discharged to a table, inspected and bundled or palletized.

Besides the new stepped-end bags made with water-resistant adhesives, St. Regis also turns out other types of water-resistant bags at Franklin. These include flush-cut, pasted valve bags, pasted open-mouth bags, and regular pasted bags, as well as sewn bags of open-mouth, valve, sleeve or regular construction.

Multiwall bags made at Franklin are used to package a bewildering diversity of industrial products. Among these are fertilizer, rock products, cement, chemicals, plastics and food products. And as demand by industry for water-resistant bags increases, more and more multiwall plants are following the lead of St. Regis and converting their entire output from regular to water-resistant adhesives. Eventually, all are expected to do so.

Paterson Parchment

(Contd. from page 456)

For many years the company's vegetable parchments were used almost exclusively for wrapping of foods. But today, an increasing number of products for industrial uses are being made. Users of these papers include IBM, International Harvester, John Deere, Formica, Permacel Tape, General Electric, Johnson & Johnson, Westinghouse and many others through direct or indirect sales.

Custom Made Papers go into such products as oil filters for jet airplanes, vacuum filter disposal bags, pressure sensitive tapes, protective papers for stainless steel and Formica types of laminates, automatic filters, masking tapes, wet sandpaper backing, photographic leader papers, artificial flowers, sealing tape for government cartons, book and tablet and lampshade bindings and plastic embedments.

End uses will include new types of papers for decorative laminates, special photographic papers and masking tapes for pressure-sensitive applications.

Research and production

Paterson's policy of keeping up-to-date on improved techniques, its research program and extensive laboratory work are geared to the changing needs of its customers and prospective customers. One of the most promising results of such research is certain types of porous papers, papers which can be marketed without further conversion.

The mill's laboratory work is decentralized. Paterson has three separate laboratories: (1) Product Development, which comes directly under the president; (2) Mill, which evaluates raw materials and mill operations problems; and (3) Control, the chief function of which is to maintain quality.

Key men in Paterson production are Karl Dammann, vice president, manufacturing; Henry Harmsen, assistant vice president; and R. Lee Buechler, general superintendent.

Heading the laboratory departments are William G. Louden, Product Development; Everett Worth, Mill; and Jerome Klein, Control.

Dammann is one of the most experienced paper production men in the country. He has been with the company 41 years. He was appointed vice-president, manufacturing, several years ago. Prior to that time he had served the company in various production executive capacities. He is also a director of the company.

Harmsen has been with the company 39 years. He was recently appointed to his present position after serving as production manager. He is a chemist by profession.

Buechler joined the Paterson organization three years ago. He was formerly with the Crystal Tissue Company, Middletown, Ohio.

Equipment in operation

Huyck engineer measures openness of a running felt.

Measurement of running felt openness

T. C. SMITH
Technical Supervisor
Crown-Zellerbach Corp.

and

H. H. DIRZUWEIT
Felt Development Section Manager
Huyck Felt Co.

The Huyck-Smyth porosity tester, already in operation at many mills, provides the first practical means of "putting-a-number" on running felt porosity and allows for closer operator control over felt characteristics.

THE NEED for a device to measure the porosity of a running felt has long been recognized. Such a device could be used to determine the rate of filling up of a felt, to locate open or closed streaks and to measure the effectiveness of and need for felt cleaning. It would also give an indication of how varying felt construction affects operating fabric porosity as opposed to the static present day methods. This would also provide valuable information on the relationship of fabric recovery properties to felt porosity.

Laboratory methods

The usual laboratory procedure for measuring fabric porosity is to measure the rate of flow of water or air through a given fabric area under standard conditions of temperature and pressure drop across the fabric. These tests require that the fabric be firmly clamped in the apparatus. This, of course, makes it impossible to test a running felt on the paper machine.

Vacuum devices

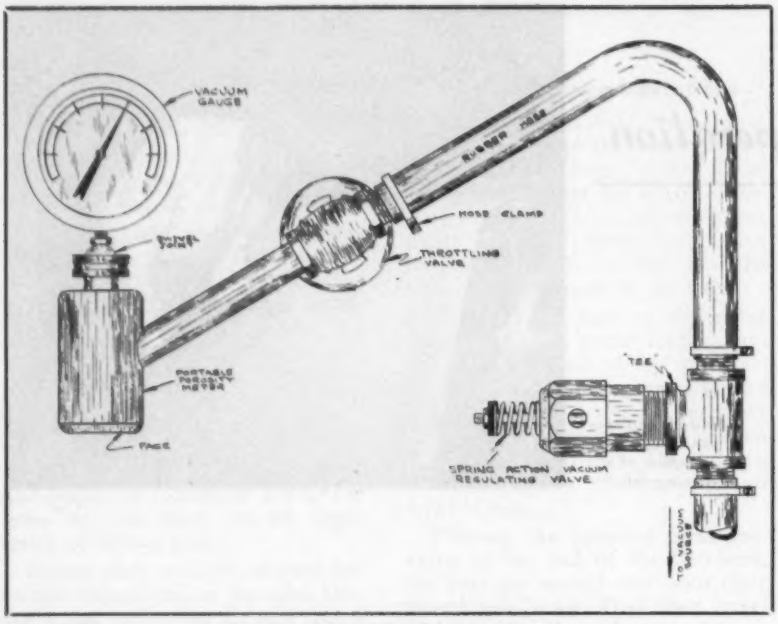
It is well known that vacuum on felt suction rolls, suction boxes and felt conditioners increases throughout the life of a felt. In fact this change has been used by some mills as an indication of felt openness. In most cases the conditions of felt porosity, total open area of the suction box holes and the level of available vacuum prevent a large relative change in vacuum reading. This characteristic makes this method of judging felt porosity lacking in sensitivity and prevents pinpointing differences in openness across the width of the felt.

Huyck-Smyth porosity tester

Developed by T. C. Smyth of Crown Zellerbach and distributed exclusively by The Huyck Felt Company, the Huyck-Smyth porosity tester is the first instrument engineered specifically to measure porosity of running felts. It is essentially a small vacuum box, the stainless steel perforated face of which is applied to the surface of the felt to be measured. A vacuum gauge is connected to the head by means of a swivel-joint and serves as an indicator of felt openness. The swivel-joint affords a means of rotating and tilting the gauge to make viewing easier in awkward positions. The hollow side arm of the tester is connected through a globe valve and a suitable length of hose to a line with high vacuum and capacity.

Calibration

This instrument is easily calibrated using a one-hole rubber disc. Here all but one hole in the face is covered. The throttling valve is adjusted with the disc on the instrument to give a low reading for an open felt and a high reading for a close felt. The actual value depends upon operating



Schematic of Huyck-Smyth porosity tester.

tions but is easy to determine in each case.

Measurements are taken by removing the rubber disc and placing the uncovered face plate against the moving felt. A high reading indicates a close felt — a low reading an open felt. There are other factors such as machine speed and felt water content which affect the reading but these do not materially influence the device's effectiveness. The profile of porosity may be determined by moving the tester across the felt. In this way filled or worn streaks on areas may be pinpointed, the effect of seam cocking determined and numerous machine conditions affecting the openness of the felt located.

Applications

The Huyck-Smyth tester, used to evaluate the effect of cleaning methods and of seam straightening, can provide valuable data for following felt performance. By plotting readings against time throughout the life of a felt, it is possible to analyze the effects of variables on the felt porosity. In certain mills this is used as an indication of when to remove the felt. Toward the end of useful felt life, there is a point at which the porosity decrease becomes very rapid. By being able to measure this "break-point", machine operators are warned of the need for felt removal.

Comparison of results

When results are to be compared they must be made under the same vacuum conditions. To provide constant available vacuum, it usually is necessary to employ a spring-loaded, vacuum-breaker type regulator at the point of connection. This is especially important when readings are to be compared at different machine locations.

Research at Consolidated Paper Co.

(Continued from page 461)

drum filter complete with vacuum pump and press rolls.

The stated objective of these new facilities is to conduct an active research program aimed at extending the wood supply and improving the efficiency with which it is utilized; improving product quality for present and new uses; developing by-products from present waste materials; and developing new primary products based upon wood or other raw material resources of the corporation.

An interesting example of how the pilot plant and research laboratory function in cooperation with production facilities is reflected in the decision to install 500-hp Sprout-Waldron refiners at the new Port Alfred high yield sulfite mill. The pilot plant conducted a series of analyses and tests to determine the suitability of the equipment offered by a number of refiner manufacturers. A total of 197 individual refiner runs on high yield sulfite were made to determine the best plate designs and plate clearances for Consolidated's purpose. The choice of the "Sprouts" for this particular application was based on:

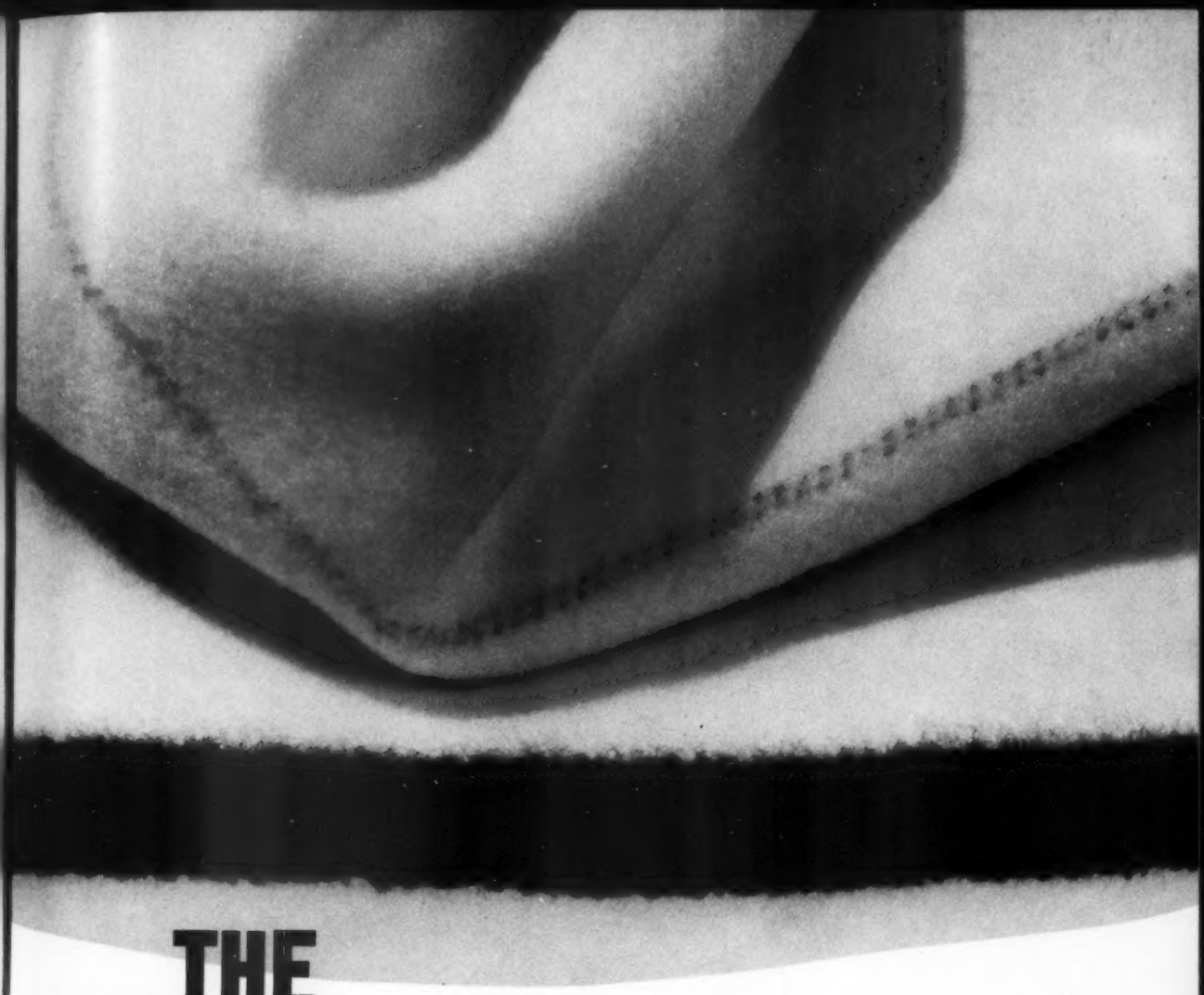
1. High quality of pulp produced.
2. High horsepower available per machine. It was noted that at 500-hp forced ventilation was not required and that using forced ventilation the horsepower could be raised to 600 or 625.
3. Relatively low cost per installed horsepower.
4. Relatively low electrical equipment cost due to single disc design.
5. Simplified mechanism for adjusting tramming and changing plates.
6. Anticipated low maintenance due to a variety of mechanical design features.

The new laboratory and the new pilot plant combine to make it possible for Consolidated to keep their eyes on quality and to pre-test equipment and methods prior to their being used for production purposes. The size of the pilot plant and the equipment available make it possible to do more than just guess from small scale test work. With this new laboratory, Consolidated can so closely simulate production runs that the scale-up error is reduced to a minimum.

Adhesives

(Continued from page 460)

Still a different type of polyester results when unsaturated dibasic acids are condensed with glycols to obtain thermoplastic chains with unsaturated linkages. Maleic acid is the most common unsaturated dibasic acid used for this purpose, whereas the glycols may vary from ethylene glycol, propylene glycol and related simple molecules to relatively high molecular weight polyethylene glycols. These unsaturated polyesters may, in turn, be converted to thermo-setting compositions by copolymerizing them with monomers such as styrene. It is compositions like this which are used to manufacture glass reinforced laminates which find wide application for structural purposes.



THE MARK OF THE BEST IN FELTS

The blue and red stripes on this Super Plate Press Felt have identified all Huyck felts for close to 90 years.

No other feltmaker has come forward with so many "firsts" in felt-making and felt services as Huyck. No other felt has ever offered more advantages and economies.

Look for these familiar blue and red stripes on your felts and felt packages—THE MARK OF THE BEST IN FELTS *for your machines.*

HUYCK FELTS

Huyck Felt Co.,
Rensselaer, N. Y.;
Aliceville, Ala.;
Division of F. C. Huyck & Sons.
In Canada: Kenwood Mills Ltd.,
Arnprior, Ontario

NEW HUYCK FELTS ★ INDUSTRIAL FABRICS

FIRST IN QUALITY • FIRST IN SERVICE SINCE 1870

DOW | COATINGS

DOW LATEX "BEEFS-UP" BOXBOARD COATINGS!

Newsboard maker gets better binder at no extra cost

A switch from casein to Dow Latex as a coating binder for boxboard has resulted in better quality board and easier processing for a large midwestern manufacturer of clay-coated board.

Here's how: By substituting Dow Latex for casein in the binder formulation, they were able to obtain a pigmented clay coating with a lower viscosity, but containing a higher percentage of solid materials.

Result: Now, the new high-solids formulation with Dow Latex gives them a higher quality board with a heavier coating and better coverage—and as a result—better overall printability! The higher percentage of latex present in the coating means easier finishing on the calender — and a smoother, glossier board.

Many leading paper and board manufacturers are discovering the advantages of Dow Latex. Chances are a change to Dow Latex in the coating will make your boxboard behave better—in your production processes, and in your customer's end use. Why not contact the nearest Dow sales office, or THE DOW CHEMICAL COMPANY, Dept. 2321DN10, Midland, Michigan, for complete technical information.

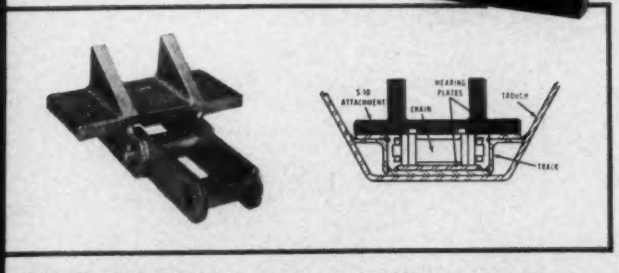
THE DOW CHEMICAL COMPANY · MIDLAND, MICHIGAN

Tough as they come

for pulpwood handling

Time and again, Link-Belt SS-150+ has replaced other chains and produced dramatically longer life on pulpwood conveyors. With its average ultimate strength of 100,000 lbs. — plus hardened pins, bushings and steel sidebars — it resists repeated shock loads. Joint bearing surfaces resist wear . . . ignore constant subjection to the cutting action of abrasive particles.

Consult new Link-Belt Catalog 1050 for full details. Call for a copy from your Link-Belt office or authorized stock-carrying distributor, listed under CHAINS in the yellow pages of your Phone Directory.



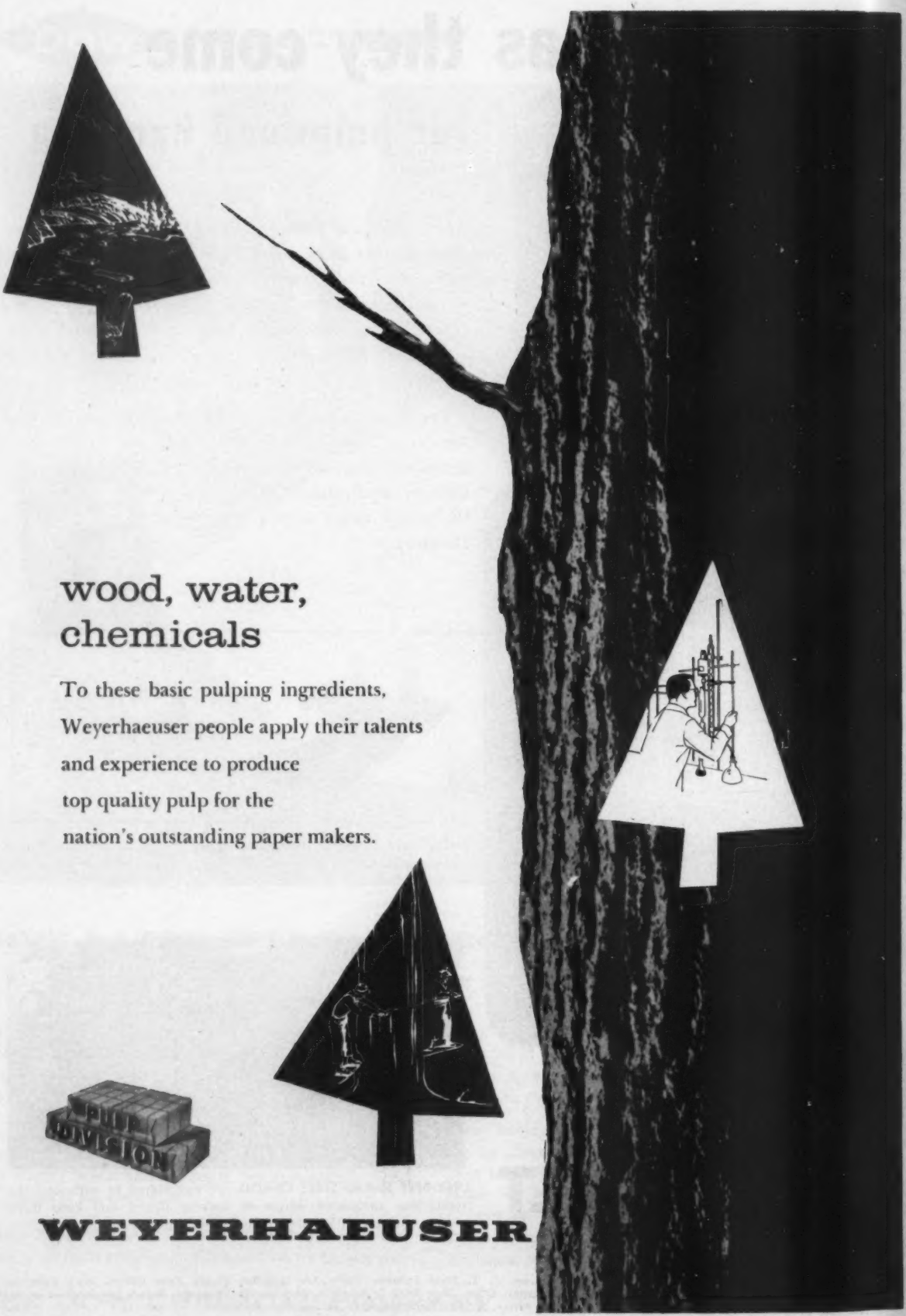
SHOCK ABSORBER. S-10 attachment for SS-150+ chain has broad sliding surfaces that contribute to long wear-life of both track and chain. Impacts are absorbed by track, not chain joint.

LINK-BELT SS-850 STEEL CHAINS are engineered to withstand the tremendous suspended weight of barking drums and keep them turning. Catalog 1050 offers complete information.

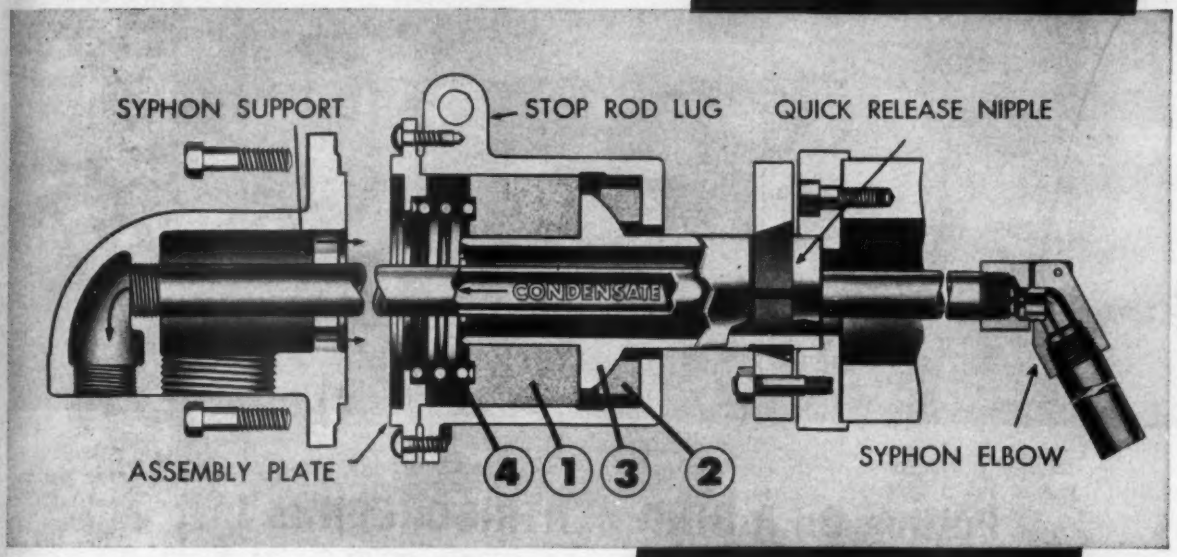
LINK-BELT

CHAINS AND SPROCKETS

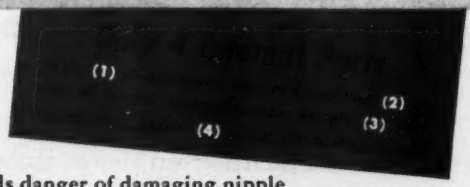
LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 19,074


wood, water,
chemicals
To these basic pulping ingredients,
Weyerhaeuser people apply their talents
and experience to produce
top quality pulp for the
nation's outstanding paper makers.
PULP
DIVISION
WEYERHAEUSER

There's lots of good news in this rotary joint



First in the Paper Industry



Simple, Time Proved Design—Has the famed Johnson packless construction, needs no lubrication or adjustment, is completely self-supporting. The rotating assembly has only four simple parts, which means fewer breeding places for trouble, easier field servicing.

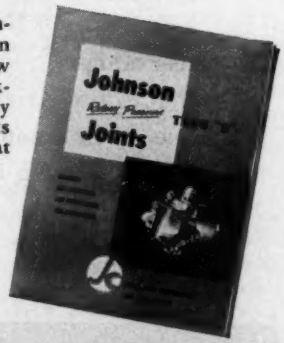
SUPER Construction—Teams "Green Streak" seal rings, of much harder and denser structure, with special Ni-Chrome plating on wearing surfaces. Results: greatly improved friction characteristics and much longer service life.

Quick Release Nipple—Utilizes powerful wedging action to lock nipple securely to journal. Greatly simplifies installation and removal—ends danger of damaging nipple with heavy wrenches.

Johnson Syphon Elbow—Replaces unwieldy, long-radius condensate syphon pipes with two simple straight pipes. Elbow hinges to pass thru joint, closes to leak-tight seat when in position. Note assembly plate on joint, which holds internal parts in position when head is removed to get at syphon pipe.

We will gladly furnish a pair of these for 90-day trial in your mill. *For complete information write for Bulletin "S".*

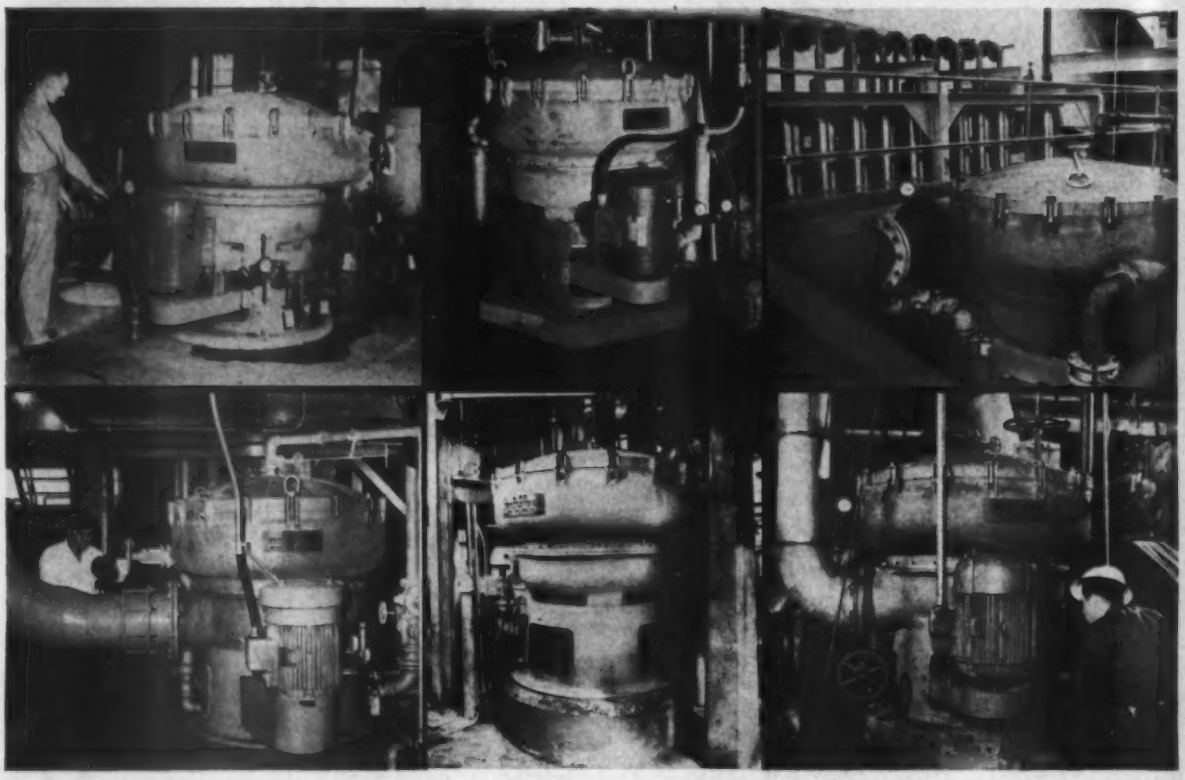
Rotating syphon pipe? *Write for Bulletin "N".* Johnson Joints are available in types and sizes to meet all operating conditions.



845 WOOD STREET • THREE RIVERS, MICHIGAN

Rotary Pressure Joints • Direct Operated Solenoid Valves

Why Don't YOU Centriscreen YOUR STOCK?



Putting On A BIRD CENTRISCREEN Is Just About As Easy As Putting On A New Valve

As these recent installations indicate, you can locate the Centriscreen almost anywhere you have a vacant five foot circle — in the basement, on the machine room floor, on a mezzanine.

It *works* — right from the start. It runs and keeps on running, without screen plate breaks, erosion or operating troubles of any kind.

It smooths production and saves money by:

- **reducing breaks on the machine**
- **cutting down on down time**
- **increasing wire life**
- **improving sheet formation**
- **eliminating lumps and slime**
- **permitting faster machine speeds**
- **maintaining uniform results on difficult grades**
- **producing a sheet that meets today's critical quality standards**
- **doing all this at lower screening cost per ton**

BIRD MACHINE COMPANY

SOUTH WALPOLE, MASS.

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Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

BIRD MACHINE'S 50th YEAR OF SERVICE TO INDUSTRY

CURRENT COMMENTS

Expansion is justified—1965 production total—Duty rates to be discussed

WARREN B. BULLOCK

Returning prosperity in the paper industry forecast in this department several months ago has been discovered by a group of Wall Street brokerage houses. In the last six weeks, seven important houses have issued special reports in which their financial analysts have been impressed by the industry's performance in the first half of the year and the prospects for future months. Purchases of paper company equities is recommended by all of these analysts.

The foresight of management in planning further expansion seems to be justified by the increased demand stimulating operations to an unprecedented level. A survey by the First National City Bank of New York reports a 39 per cent increase in earnings of 31 representative companies.

More projects underway

The latest forecasts of the United States Department of Commerce estimate a total production by 1965 of 43.8 million tons per year, or 42 per cent above the actual tonnage of 30.8 million tons in 1958.

"A recent tally", says the E. F. Hutton analyst, "shows that 22 major projects have been announced since January 1, 1959, scheduled to come on stream in 1960 and 1961. It is calculated that these programs will represent a capital investment of at least $300 million. In addition, seven projects are under active consideration but no funds have as yet been voted. Another 12 which are in various phases of construction are scheduled for completion this year and 1960. The industry is already embarking on a new round of capital additions and expansion aimed at the markets of the 1960's".

Another analyst figures that 1959 profits may not reach the 1956 total of $680 million, but will be 25 per cent higher than in 1958.

Internal expansion

The internal expansion by paper companies is still continuing. The *Bergstrom Paper Co.* has announced a 50 per cent stock dividend on both its "A" and its "B" stock, to be paid in shares of Class "A" common stock.

Kalamazoo Parchment increased its dividend rate of common stock to 40 cents per share compared with the old rate of 35 cents.

American Israeli Paper Mills Ltd. has been listed on the American Stock Exchange, and is the first Israeli corporation to be listed on any international securities exchange. The Mazer interests of *Hudson Pulp & Paper Co.* are important factors in the development of this company.

Champion Paper & Fibre Co. has gone into the distributing field with the purchase of *Wertgame Paper Co.* of Kansas City, Mo. Very few, if any, paper manufacturing companies have ever expanded into the merchandising field hitherto almost entirely separate from the manufacturing area of operations.

Kimberly-Clark Corp. is another company which has gone into a far different field than its original production of printing paper. Formal announcement has been made that Kimberly-Clark and *J. P. Stevens Corp.*, leading textile manufacturers, have formed a new $5 million corporation to be known as *Kimberly-Stevens Corp.*, to produce and sell non-woven materials. Kimberly-Clark has already gone far with its experiments in the production of "throw-away clothing" made of paper, such as hospital jackets, surgical equipment and combination paper and textile tenting supplies. The new company will pool resources and research skill in the non-woven field.

Rayonier Inc. has decided on a reorganization under which its former subsidiary, *Alaska Pine & Cellulose Ltd.*, will become *Rayonier, Canada Ltd.*, and will proceed with the building of a new bleached kraft mill at Woodfibre, B.C. A daily output of 250 tons is scheduled for early 1961.

The directors of *W. R. Grace & Co.* have approved in principle acquisition of assets of *Endura Corp.* of Quakertown, Pa., and the stock of the *Vellumoid Co.* of Worcester, Mass. Both companies will become part of W. R. Grace & Co.'s Dewey & Almy Chemical division.

Bowater Paper Corp. Ltd. has announced it was extending its operations to New Zealand through the acquisition of an interest in the *Tasman Pulp & Paper Co.* of Auckland, N. Z. It is proposed that a second paper machine and auxiliary plant will be installed as soon as possible to increase the annual capacity to 180,000 tons of newsprint. Further developments in Bowaters' diversification program are marked by the announcement of the acquisition of three companies in continental Europe. *Bowater Cello S. A.* will carry on the business of *Cello, S. A.*, folding carton manufacturers in Ghent, Belgium; *Bowater Prot S. A.* will continue the business of *Establisement Prot Freres S.A.*, manufacturers of folding carton, paper bags and other forms of flexible packaging in the city of Rheims in France. The third acquisition is of *Perrone S. p. A.*, manufacturers of corrugated fibreboard cases at Genoa, Italy, which will be known as *Bowater Perrone S. p. A.* All three companies will become subsidiaries of the Bowater Paper Corp. Ltd.

Duty rates to be discussed

The United States is scheduling negotiations for the reduction of current duty rates on boxes and books to compensate foreign nations for the loss of their United States markets due to "escape close" duty rate increases on clinical thermometers, spring clothespins and safety pins.

Another series of negotiations is scheduled as a result of Cuba's program to "renegotiate" its rates of duty on paper, cardboard and manufacturers

RYKON *Grease*

passed this test at Corn Products Company

Situation: The springs in the grease chargers on expeller machines at Corn Products Company's Argo, Illinois, plant are under extra heavy tension. Due to this tension, oil formerly separated from the grease thickener in the grease cups. Bearings did not receive proper lubrication and the cups filled with grease thickener residue. The system needed cleaning every three months. Each time, large amounts of residue were found. Ten special-purpose greases were tried in an effort to solve the problem.

What was done: A Standard Oil lubrication specialist working with Corn Products' plant maintenance people recommended RYKON Grease #2 E.P. The system now needs cleaning only every six to nine months. Very little residue is found. Now RYKON Grease has become one of the important lubricating greases in use at Corn Products' Argo plant.

RYKON Grease is formulated with a unique non-soap organic thickener. The fibers of this thickener hold RYKON's fine quality base oil firmly in suspension. The grease resists water washing, high temperature and dirt contamination while providing superior lubrication to bearings of all types.

What you can do: Get more facts about RYKON Grease from the Standard Oil office nearest you anywhere in the 15 Midwest and Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Ill.**

You expect more from **STANDARD** *and you get it!*

Standard's Arnold Parus and chief lubrication foreman Henry Anderson take a look at expeller unit's grease system. Arnold Parus is well equipped through experience and training to work with plant men on lubrication problems. Arnold has a B.S. degree from Bradley University and three years' field experience in this kind of work. He has also completed Standard's Sales Engineering School.

Quick facts about **RYKON** *Grease*

- Heat stable. At sustained high temperatures, RYKON Grease remains soft and grease-like.
- Resistant to water washing.
- Mechanically stable. Minimum change in consistency in service.
- Resistant to oxidation. Thickener acts as inhibitor.
- Exceptional rust preventive properties.

of paper. "Renegotiation" in the Cuban interpretation is, in effect, a complete withdrawal of all of the tariff reductions Cuba has granted on nearly 50 paper and paperboard items negotiated since 1947. Paper is not being singled out for special attack, as the "renegotiation" program covers practically every commodity on which there have been negotiations in the past. Meanwhile, Cuba is free to increase present duty rates on any other items which were not the subject of negotiations in the past twelve years. Under its quasi-protectorate of Cuba, the United States has been allowed to give Cuba a preferential reduction of 20 per cent over any rate granted to other countries. Whether this country will be able to secure any corresponding concessions for any duty rate increases imposed by Cuba remains to be seen.

Stock and Bond Quotations

New York Stock Exchange — Stocks

Closing Prices	Sept. 10, 1959	Aug. 10, 1959
American Can	43	45¾
Same Pref.	38⅛	38
Celotex	37	38⅛
Same Pref.	* 19-19⅛	* 18½-19
Certain-Teed	12¾	14⅜
Champion P. & F.	41¼	45½
Same Pref.	* 90-90½	96¼
Chesapeake of Va.	41	* 38¼-39¼
Container	27⅜	28¾
Same Pref.	* 87-89	* 89½-90¼
Continental Can	47¾	52⅜
Same Pref.	* 77-80¼	* 81½-83
Crown Zellerbach	53	53½
Same Pref.	* 87¾-90	90
Diamond Gardner	32	33⅜
Same Pref.	* 30-30⅛	30½
Federal Paperboard	48½	46½
Same Pref.	* 22⅛-22⅝	23
Fibre Paper Board	52	49⅛
Great Northern	51⅞	54⅝
Hammermill	34½	36⅞
International	125	131
Same Pref.	* 89-90	* 89½-91
Kimberly-Clark	64½	69¼
McAndrews & Forbes	* 30-30¼	31⅞
Masonite	36¾	41½
Mead Corp.	47	45¼
Same Pref.	* 89⅛-92½	89
Minnesota & Ontario	33	34⅞
Oxford Paper	34	33¼
Same Pref.	* 93-93¼	94½
Rayonier	23⅞	27¼
Riegel Paper	44⅛	44⅛
St. Regis	47½	51⅝
Same Pref.	93¾	* 93½-95½
Scott Paper	82	85
Same $4 Pref.	88¼	* 87⅝-89¼
Same $3.40 Pref.	* 77-78¼	77
Sealright	* 39¼-40	41
Standard Packaging	34¼	36
Same $1.60 Pref.	99	*105-113
Same $1.20 Pref.	39½	39
Sutherland Paper	37⅝	40
Union Bag-Camp	42¼	43½
United B. & C.	32	35⅜
United Wallpaper	8⅜	* 8⅜-8⅞
Same Pref.	* 18-18½	* 17-18½
U. S. Gypsum	100¾	108½
Same Pref.	*151-153¼	150½
West Va. P. & P.	48	49
Same Pref.	* 92¼-95	* 94½-95

New York Stock Exchange — Bonds

Champion P. & F. 4¾%	109	113
Champion P. & F. 3¼%	—	—
Diamond Gardner 3%	—	90¾
Kimberly-Clark 3%	90½	88½
Mead Corp. 3%	—	—
Oxford 4¾%	110	110½
Scott 3%	106½	110¾

American Stock Exchange — Stocks

Allied Paper	11	12
American Writing	32	33
Brown Co.	12¾	14⅛
Puget Sound	24⅛	25⅜

*Closing Bid and Asked Prices

Capacities to 1550 H.P.

★ Single, Double, Triple Reductions
★ Standard Ratios from 2.08 to 1 up to 360 to 1
★ 9 Shaft Arrangements
★ Available With Fabricated Steel Housing

There's more capacity, greater stamina and longer service life built into Foote Bros. Maxi-Power Parallel Shaft Drives. Simple, balanced design, fewer moving parts, heavy duty construction, efficient lubrication and conservative ratings make Maxi-Power drives the logical choice for critical applications and severest operating conditions.

You can depend on Maxi-Power Drives to produce maximum performance with minimum attention because they're built for just that kind of service.

Write for Engineering Manual MPB . . . has complete details and data. There's no obligation!

100 YEARS SERVING INDUSTRY 1859-1959 FOOTE BROS.

Better Power Transmission Through Better Gears

FOOTE BROS. GEAR AND MACHINE CORPORATION
4573 SOUTH WESTERN BOULEVARD • CHICAGO 9, ILLINOIS

Call your AIM*...The Flintkote Company did...

Steel strapping cuts car bracing time 50%

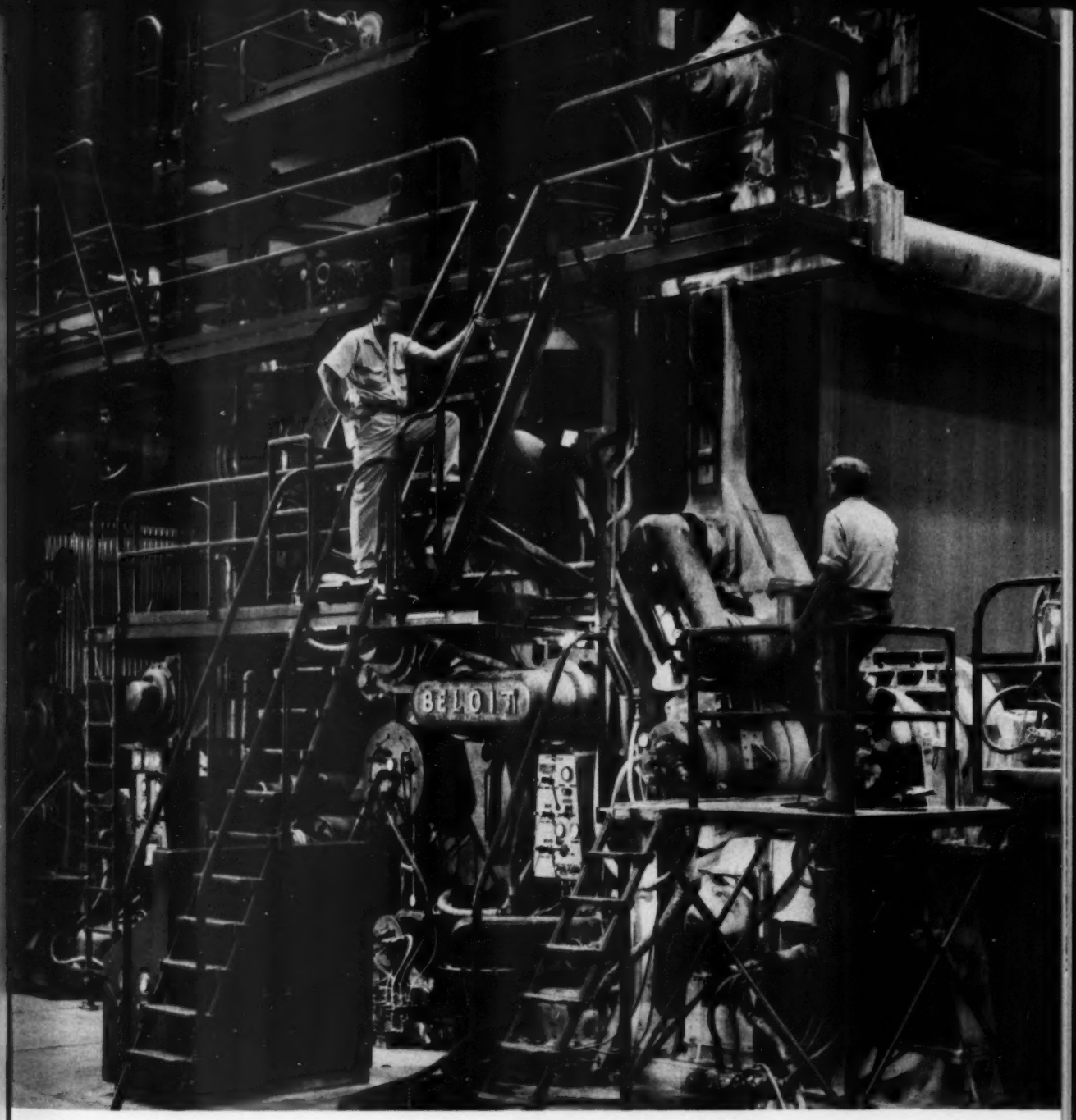
THE FLINTKOTE COMPANY, LOS ANGELES, CALIFORNIA, manufacturers of America's broadest line of building materials, uses Acme Steel heavy-duty steel strapping for bracing rolls of paper in box cars. With this method, car bracing time has been cut in half and shipments arrive in damage-free condition. (Idea No. U1-18)

Acme Idea Man Fred Hartman works with The Flintkote Company and others to improve handling, packaging, and bracing procedures.

Before loading, steel strapping is cut to length and draped along the floor and up the end wall of the car. After the rolls have been loaded in position, strapping is brought forward over the load, tensioned and sealed. Consignees like this bracing method too, since unloading is easier and damage during transit has been virtually eliminated.

***Call Your Acme Idea Man** about time and money-saving methods for shipping your products. Contact him at the nearest Acme Steel office. Or write Dept. PKU-109, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Limited, 743 Warden Avenue, Toronto 13, Ontario.

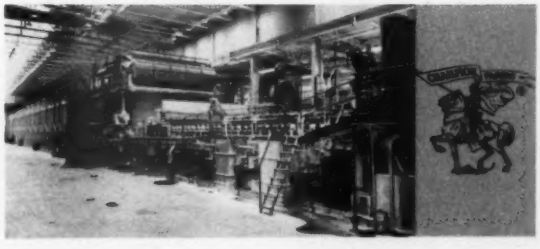
ACME STEEL **STEEL STRAPPING**



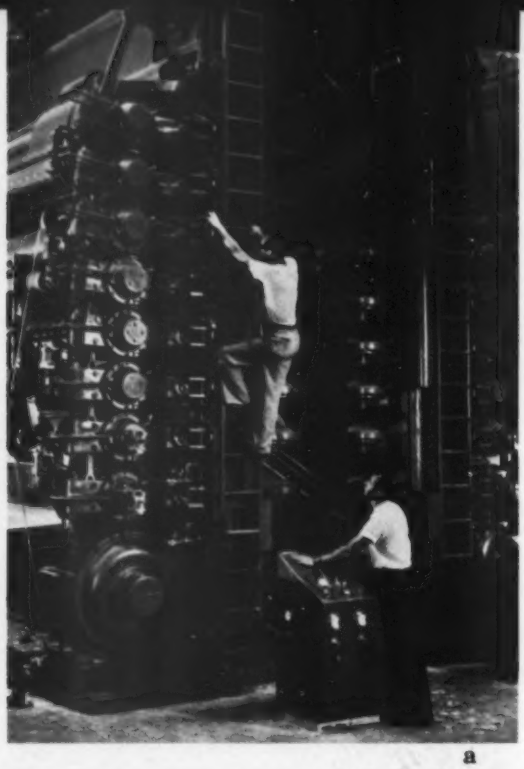
E. R. CHRISTENSEN

Twinver Press #20 Machine, Carolina Division, Canton, North Carolina

The Champion Paper and Fibre Company



Champion's new number 20 machine at Canton, North Carolina, "sets the pace in fine papermaking." This 246" fine papers machine is the largest, most productive machine of its type in the world. Its successful startup marks another milestone in Champion's continuing expansion of productive capacity. For further details, please turn page.



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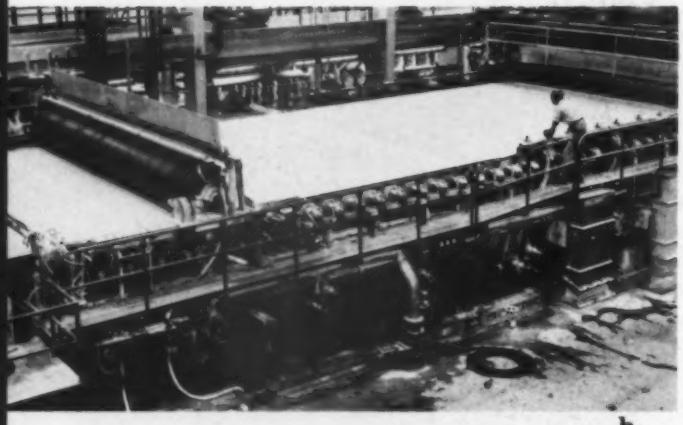

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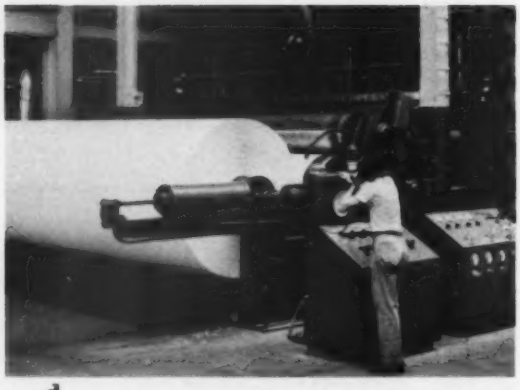

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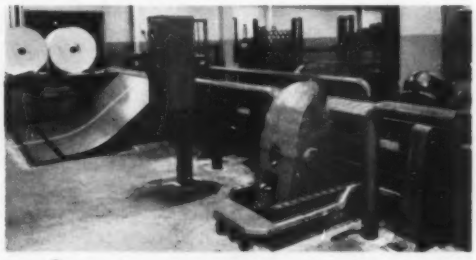
. . . some features of Champion's new Beloit 246" fine papers machine pictured on the preceding page

Number 20 machine adds 90,000 tons of annual production to The Champion Paper and Fibre Company's fine papers line. The machine is designed to operate in the 2,000 fpm range. The surrounding photos show some features of the machine. (a) Twin open side calender stacks with nip relief arrangement; (b) removable Fourdrinier; (c) finished roll conveyor and roll breaker arrangement; (d) high-speed pneumatic reel; (e) Beloit model "L" winder, oscillating unwind stand, roll and shaft handling equipment; (f) Beloit differential drive unit at wire turning roll position.



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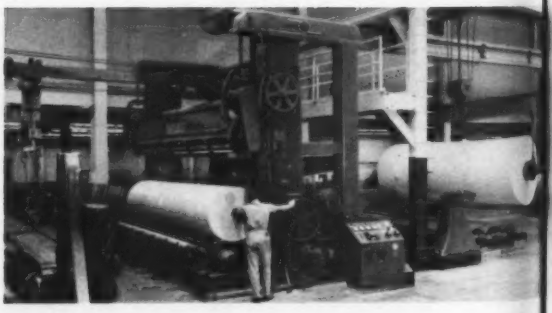


e

BELOIT

PAPER MACHINERY

your partner in papermaking

This insert is lithographed on Champion's Wedgwood® Coated Offset.

NEWS of the INDUSTRY

New Process Gives High Speed in Paperboard Manufacturing

St. Anne's Board Mill Co. of Bristol, a subsidiary of the Imperial Tobacco Co., has introduced a new process for the paper and cartonboard manufacture. The process is known as Inverform. It is claimed to be capable of producing high-grade paper and board for packaging at a very high speed.

In using the Inverform process, a second wire gauze belt is applied to the first, which sandwiches the wet woodpulp fibers. The water pressed through the top wire gauze is then removed by a scraper blade and vacuum devices.

Licences to make Inverform machines have been granted to one British firm and one American firm. The new development is to be demonstrated to the technical section of the British Paper & Board Makers' Association at its meeting at Bristol in October.

Hercules Powder to Study Chemical Materials

About $500,000 will be used to begin a program under which Hercules Powder Co. will sponsor to study the toxicological properties of chemicals that Hercules supplies to the food packaging industry.

With the guidance and cooperation of the Food & Drug Administration, the program will be conducted by the Industrial Bio-test Laboratories Inc. in Northbrook, Ill. The study is planned in two phases—the first covering acute and sub-acute toxicological studies; the second to be concerned with chronic toxicological studies ranging up to three years in length.

"Ever since the first paper bag was made and used to package the family groceries, adhesives have come in contact with food without any apparent harm to the consumer. Under the new FDA regulations, however, proof of harmlessness must be definitely established to permit continued use of these materials in food packaging", stated Paul Mayfield, vice president of Hercules. "Safety to the consumer in any of these products has never been questioned, but under the new FDA law, safety must now be formally proved in accordance with exacting and detailed specifications of the law if use of these materials is to continue".

PIMA Membership Drive Continues

The Paper Industry Management Association is in its second month of the 1959 membership drive.

Harry E. Weston, secretary and treasurer, stated: "We are encouraged to anticipate significant success in our drive for new members through the face-to-face promotion by our solicitors as a result of the good response we have already experienced from our mail solicitation".

PIMA's new constitution and by-laws now provide for a broadly expanded membership. Many more papermakers with operating responsibilities, in addition to superintendents, are certain to find PIMA membership most advantageous. The membership offers papermakers abundant opportunities to share their know-how in an increasingly complex and diverse industry. Participation in the group's educational activities presents an avenue of approach to further profitable expansion of the paper industry.

New Corporate Symbol

This new corporate symbol will now appear on the timber products manufactured by Weyerhaeuser Timber Co.'s plants.

In addition to the new symbol, the company has also announced that the word "timber" will be dropped from the company's name. "When the company was formed 60 years ago", stated F. K. Weyerhaeuser, president, "it was exclusively in the business of managing timberland. Timber is still our basic resource, but its use in the company title does not indicate adequately the wide range of products we now manufacture".

Finance Program Gets Good Response

Last March, the Commercial Discount Corp. of Chicago announced a new long-term (5-year) capital financing plan for manufacturers. Since that time, the company has announced that the corporation has met with an overwhelming response from growth companies in the paper industry.

This financing plan differs from short-term bank lending in that the term may run to five years if desired by the borrower. No share of ownership or profits or voice in management, is desired by Commercial Discount. The new loan is based on potential earnings power rather than the value of fixed assets of the borrower, or the equity in the business. However, the usual type of business loan collateral is required.

New Products

Papercraft Corp. of Pittsburgh, Pa., has announced the development of a new transparent plastic film for wrapping foods and household products. The film is said to be self-sealing odorless, moisture-proof and is unaffected by changes in temperature and humidity. It will be sold under the name of Kaylene.

Flintkote Co. is now marketing a new protective, reflective and decorative asphalt emulsion coating compound in gleaming aluminum color. The product is said to be non-flammable, will not flow in hot weather and will not stain or alligator or crack over any type of asphalt sub-surface.

Marketed under the name of Aluminized Static, it will be recommended for use on roofs, bridges, water tanks, and many other exposed surface areas.

The *Bermico Division of Brown Co.* has introduced a new fiber-pipe elbow to connect downspouts to underground dry well pipes. The elbow has a 100° angle which automatically provides the correct slope for leadoff pipelines.

Recent Expansions in the Industry

New Machine is in Production at Gilbert Paper

Gilbert Paper Co. of Nenasha, Wis., has started production on their new Valley Iron Works Machine.

The new machine replaces the company's old Number 2 machine which has been removed. The new machine will also be called the Number 2 machine.

The latest equipment for maximum flexibility from the inlet to the reel has been incorporated in the new Valley machine. Stock passes through Shartle Selectifier screens and a three-stage Bauer Cleaning system. From there it passes into the stock entrance equipment and out through the Valley fully-adjustable inlet on to the fourdrinier. The fourdrinier is of the stationary type and has a 64-ft. wire and trims to 97 in. Also included are suction boxes, a suction roll and a dandy roll.

Paper drying on the machine has some new features. The dryer section is split into three sections with two steps between. First are 13, 48-in. diameter dryers and a horizontal breaker stack consisting of two horizontal rolls to calender damp paper; then there are 10 more 48-in. diameter dryers and a Valley horizontal size press, which adds glue or starch sizing to the sheet; then there are six more 48-in. diameter dryers, and finally, a five-roll calender stack to produce the smooth finish on the paper. A total of 29 Valley dryers were furnished. Added to the dryer section were four Gardner high-velocity air dryers. A Beta Ray gauge measures the basis weight. A Valley horizontal track surface wind reel, designed for latter addition of the center wind components, completed the machine.

Anti-friction bearings are used throughout the machine. They are lubricated by a Bowser-forced feed system, with the lubricant filtered for dirt and water after circulation.

A new generator capable of 3,500 KWH and a new boiler were added to the power plant for the new machine. A dynamatic drive was installed on the machine which electronically controls the machine speed from a range of 50 FPM to 1000 FPM.

On the new Valley machine, Gilbert will produce cotton fiber and rag contat papers. Cotton fiber contents will range from 25 per cent to 100 per cent. Their end use will be bond, index, ledger, drawing, currency, manuscript, cover, tracing and specialty grades.

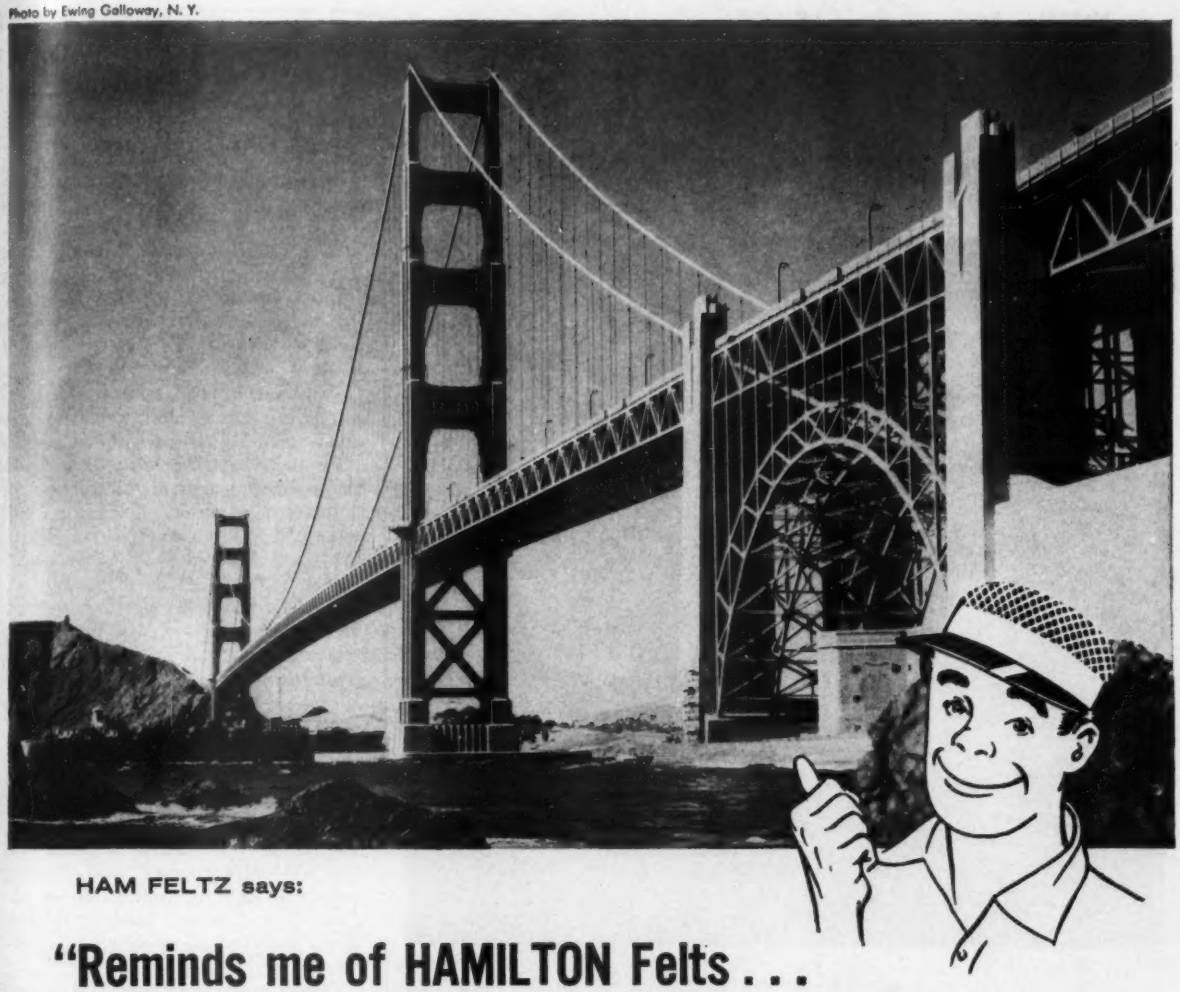
Additional finishing room space is being provided for the new machine also, with the construction of a 72- by 146-in. addition to the north of the present finishing room.

Wet end view of the new No. 2 machine installed at Gilbert Paper Co.

View of the Valley horizontal size presses between dryer sections.

General view of the machine taken from the wet end.

Photo by Ewing Galloway, N. Y.



HAM FELTZ says:

"Reminds me of HAMILTON Felts . . . they're engineered to solve water problems, too!"

"Crossing the harbor at San Francisco was once a real problem. Now motorists breeze across the Golden Gate Bridge—in minutes.

"Reminds me of the way Hamilton Felts save time and trouble for paper makers.

"That's because Shuler & Benninghofen keep really accurate records of every order. All you have to do to get a Hamilton Felt exactly like your last one is to tell your Hamilton Service Salesman or write, wire or telephone us."

If this is important to you (and it should be) why not start using us as one source of your felt supply—today?

YOU CAN'T BEAT

Hamilton

FELTS

WIN . . . *A NEW Spincast Fishing Outfit*

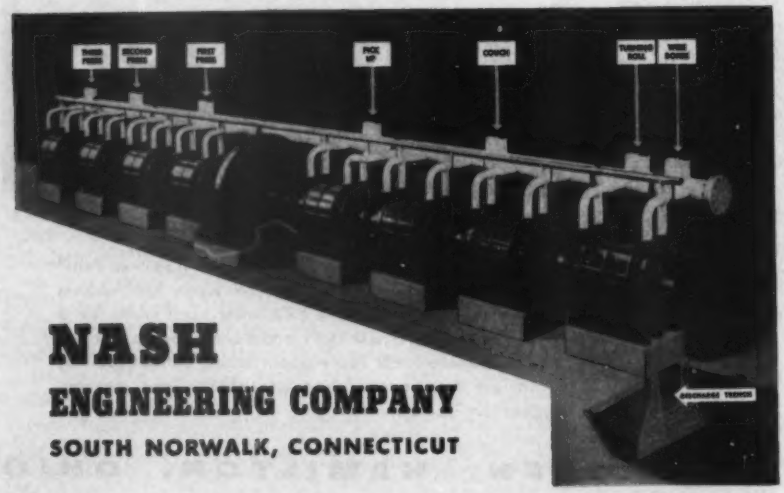
What famous landmark reminds you of Hamilton Felts? Tell us why in a few words; sign your name and address and name of company. The best letter each month by a paper maker wins a new 1959 model Shakespeare Spincast Rod and Reel—FREE! Every paper maker entrant receives a famous Rex Spoon fishing lure—FREE. Send me your suggestion—today.

SHULER & BENNINGHOFEN, HAMILTON, OHIO

This New Nash Vacuum Pump Offers Four Separate Suctions and Vacuums Simultaneously

The Nash 5308-A has four separate suction inlets, each of which functions independently of the others. This offers the machine operator great flexibility, since these may be used in any desired combination to produce a variety of capacities and vacuums.

Picture below shows simple drive possible and flexibility of piping permitting capacities to exactly fit requirements of different sections of the paper machine.



NASH
ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT

News of the Industry . . .

Canadian International to Install new Fourdrinier

Canadian and United States engineering firms are pooling talents and resources to build the new fourdrinier machine to be installed at the La Tuque mill of Canadian International Paper Co. The two firms are Dominion Engineering Co. Ltd. of Lanchine, Que., and Beloit Iron Works of Beloit, Wis.

The machine has been designed for maximum flexibility in the production of bag and wrapping papers and also bleached foodboards with an estimated annual production of 35 thousand tons. The unit will have a 176-in. wire, will be 400 ft. long, 20 ft. high and will require 6,000 hp.

Included in the $10 million expansion program at La Tuque is a Black-Clawson (Canada) laminating machine to produce heavier bleached boards for drinking cups and foodboard.

Polyfibron Lab Nears Completion

A polyfibron laboratory with fully-integrated pilot scale facilities for making impregnating and coating papers is nearing completion at the Cambridge, Mass., headquarters of the Dewey & Almy Chemical Div., W. R. Grace & Co.

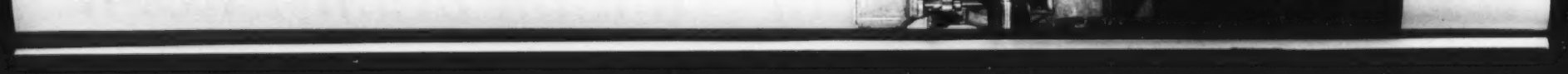
It was announced that it is already in use by researchers for: (1) pulp treatment, paper forming, drying and calendering; (2) impregnation by beater addition, wet saturation and dry saturation; and (3) the application, drying and testing of paper coatings.

The name Polyfibron (polymers-fibers) describes Dewey & Almy's unique combination of experience and skills in two technologies, the knowledge of polymers and the fibers in formed webs which are impregnated and coated with certain of these polymers.

Manager of the Polyfibron laboratory is Ralph L. Wentworth. Papermaking and impregnation studies are supervised by C. Berk Moore of the Battery, Polyfibron and Textile Division. Robert F. Avery of the Organic Chemicals Division is in charge of the paper coating research facilities.

Sutherland Plans Mill in Georgia

An announcement has been made by R. S. Breckenridge, manager of the Albany, Ga., plant of Sutherland Paper Co., that the company is

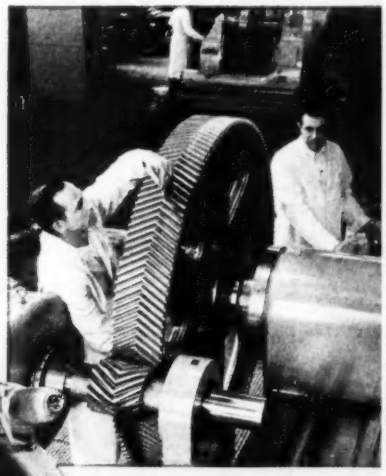


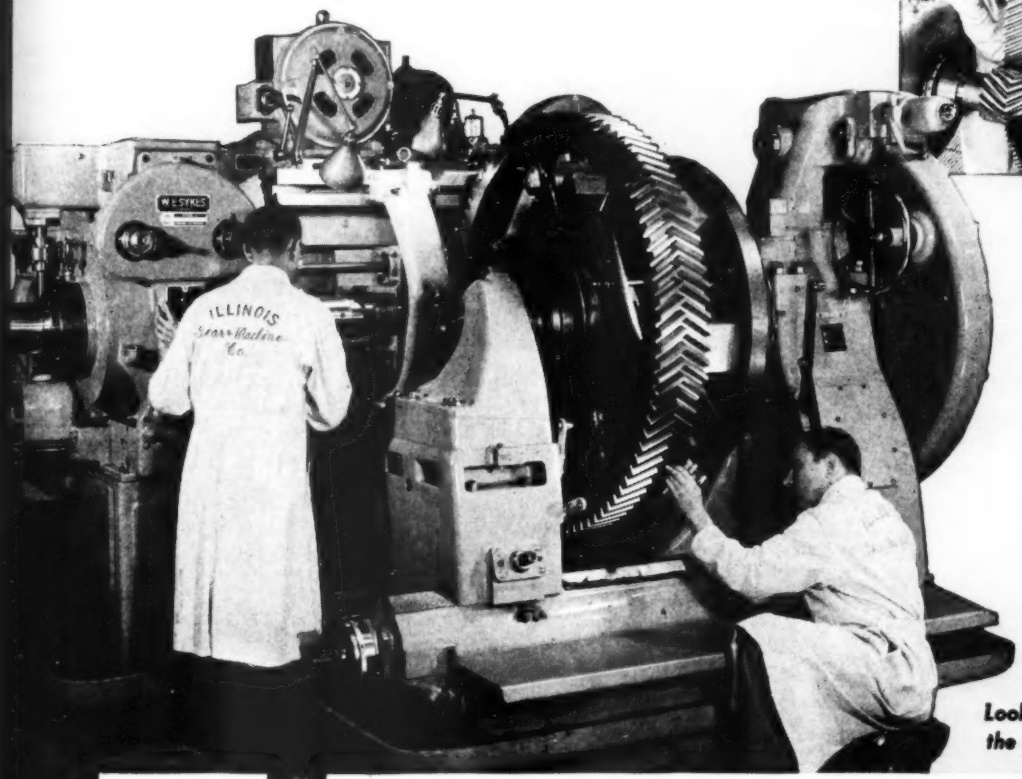
Here's how Illinois Gear makes sure of Quality in HERRINGBONE GEARS

If you could look down into the ILLINOIS GEAR plants you would see great batteries of the world's most modern gear producing equipment . . . manned by skilled craftsmen who *know* how to operate this equipment.

Typical of what you would see is the precision Herringbone Gear Generator and Testing Equipment, illustrated here. With unmatched facilities such as these ILLINOIS GEAR can produce one gear, ten thousand or more under the most exacting conditions of quality control . . . and meet delivery dates as promised.

If you are not now using ILLINOIS GEARS find out about the gears that can be made in any quantity with quality as the first consideration, as thousands of customers can testify.





Power testing Herringbone Gears under actual operating conditions.

The Herringbone Gear Generator has a 66" diameter and 18" face capacity. Other generators up to 134" diameter, 54" face capacity.

Look for this mark the symbol on finer gears

ILLINOIS GEARS
Reg. U.S. Pat. Off.

Gears for Every Purpose ... **one gear or 10,000 or more**

ILLINOIS GEAR & MACHINE COMPANY

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PRIVATE EYES

Jenkins' METLKOR brushes, teamed with Viking's Void Detector, check every inch of paper as it is made, find holes, measure them, count them, record them, pinpoint their positions and signal the operator, all automatically. The Jenkins' feeler brush, a critical part of the system, sends a low voltage pulse to the Viking Indicator Unit whenever a hole appears.

John Glump, Vice-President of Viking Instruments, Inc., of East Haddam, Conn., says: "Jenkins' brushes do a superb job for us. They are an improvement on 13 counts:

1. Improve accuracy of flaw detection.
2. Have no abrasive effect on product.
3. Eliminate lint problem.
4. Outlast previous brushes 3 to 1.
5. Made exactly to size, no cutting or alterations necessary.
6. Simplified mounting.
7. Improved construction.
8. Superior bristles.
9. Refillable when bristle is worn.
10. More economical.
11. Free engineering service.
12. Speedy solution to problem.
13. Quick delivery."

Jenkins' METLKOR Paper Polishing Brush

Jenkins' also makes the following brushes for the paper industry:

Conveyor Cleaning • Blanket Washer • Fourdrinier Wire Cleaning • Polishing • Coating • Dusting • Dampening • Spray • Sieve • Static Elimination • Flocking • Felt Cleaning • Feed or Carrier • Paint Brushes • Floor Sweeps

Specify Jenkins' METLKOR
the original . . . the best *Metal Core* brush

METLKOR®
CYLINDER BRUSHES
and LIFEWOOD® WOOD BACKED BRUSHES

M. W. JENKINS' SONS, INC.
— Serving Industry for 80 Years —
442 Pompton Ave., Cedar Grove
Essex County, N. J. • CEnter 9-5150

News of the Industry . . .

planning to erect a paperboard mill in Albany.

This mill would be erected on the lot where Sutherland plant stands and will cover a space of about three city blocks. It will produce paperboard that Sutherland uses in the manufacturing of egg cartons, paper cups, plates, food trays and other food containers.

Wyomissing Paper Completes Expansion

The new 150,000 sq. ft. plant near Reading, Pa., has been completed by Wyomissing Paper Products Co.

This new structure replaces its old multi-story building in West Reading, Pa., and consolidates its warehousing facilities. Provisions have been made in the building for further expansion if and when it will be required.

$27 Million Expansion for Rome Kraft

A $27 million expansion program has been started by Rome Kraft Co. of Rome, Ga.

The expansion will be construction work on the company's container board plant in Rome. This plant is jointly owned by Mead Corp. and Inland Container Corp.

Rust Engineering Co. has been contracted for the building. The project is scheduled for completion during the early half of 1961. Finishing and shipping facilities are being built first.

Research Expansion to Begin at Mead

Mead Corp. of Dayton, Ohio, has approved plans which will double the size of its research center in Chillicothe, Ohio. The cost is stated to be $1.4 million.

This center was originally built in 1953. The expansion will include two extensions to the main building to provide 39 additional offices and 20 new laboratories.

A third experimental paper machine, to test the company's developments under actual running conditions, is to be installed in the pilot plant extension. The laboratories will serve all divisions of the corporation in searching for ways to reduce the cost of raw materials, improve product quality, improve process efficiency, reduce capital expenditures, develop new products and supply specialized technical service.

Work at the Mead Research Center is under the direction of R. H. Savage, vice president of research; R. N. Griesheimer, director; and J. C. Redd, director of new products.

National Gypsum Dedicates New Plant

National Gypsum Co. was officially welcomed by the city of Waukegan, Ill., as it dedicated its new ultra-modern lake front, gypsum products plant.

A planned open-house program brought employees' families and customers in for a close-up view of the highly automated facility.

The plant is located on 20 acres of Lake Michigan shoreline and has been in production since last May. This first gypsum facility in Illinois is part of the company's new $25 million Great Lakes gypsum mining and manufacturing network. Another plant, similar to the one here, will be completed next spring in Lorain, Ohio, to complete the company's Great Lakes market.

Powell River Gets Building Permit

A $1 million building permit has been issued to Powell River Co. Ltd. for the building of a fine paper mill on Annacis Island.

The plant is expected to cost around $6 million when machinery is installed.

Bemis Opens Adhesives Firm in Ohio

Bemis Bro. Bag Co. of St. Louis, Mo., has launched a new firm to be called Morgan Adhesives Co. It is located on a 22-acre site in a new industrial park between Akron and Cleveland, Ohio.

Morgan will be a prime manufacturer and supplier of advanced pressure-sensitive adhesive printstock for the graphic arts industry and for the use of industrial and consumer manufacturers.

Operating as a subsidiary of Bemis Bro., Morgan is a part of a five-year diversification program which Bemis began two years ago.

Directing the Morgan company's development and activities will be Burton D. Morgan, a well-known figure in the pioneering of pressure-sensitive printstock.

The plant, costing $300 thousand was designed with expansion in mind. A multiple-story office and research center are among the future plans for Morgan Adhesives.

Allied News Notes . . .

Dow Chemical Co. has announced that Plant facilities for the production of polypropylene will be built at one of the several West Coast sites that is now under consideration. The plant is said to be in production in 1961 and will supply the estimated amount of polypropylene required for the West Coast.

Free Fishing Outfit

If some famous place, location, landmark or view reminds you of some feature claimed for Hamilton Felts, explain why in a few words and send it to "Ham Feltz", Shuler & Benninghofen, Hamilton, Ohio. You may be one of twelve happy paper maker winners of a new 1959 or 1960 Shakespeare Spin-Cast rod and reel, depending upon the month *your* idea is used in its advertising by Shuler and Benninghofen. It is not necessary to send in a photo. Merely a postcard or letter will suffice.

Everyone connected with a paper- or board-making company who sends in a suggestion will be awarded a famous Rex Spoon fishing lure—in this contest you can't lose!

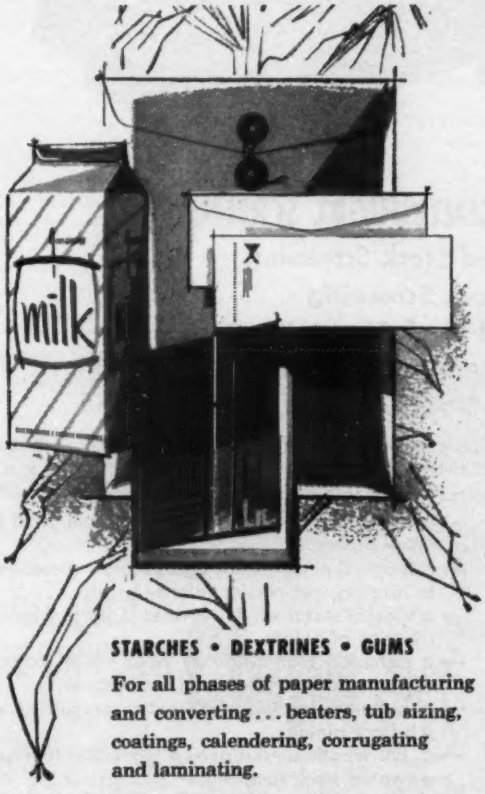
As idea starters, executives of Shuler & Benninghofen suggest that you look at their more recent ads. For instance: the Golden Gate Bridge, Venice and Niagara Falls are all reminders that Hamilton Felts are "engineered to solve *water* problems too"; Old Faithful Geyser is a reminder that "Hamilton Felts are dependable too"; a grove of California giant red woods is a reminder that "Hamilton Felts last a long time, too."

As there is a new contest each month for 12 months, it is suggested that you send in your suggestions both early and often. One person can win only one Spin-Cast Fishing outfit, however.

The Dyestuff & Chemical Division of General Aniline & Film Corp. is re-engineering its acetylene derivatives plant at Calvert City, Ky., to increase rated capacity by incorporating into existing units, the most recent technological advances in design. The decision to make these alterations was brought about by the increasing demand for polyvinylpyrrolidone (PVP) and the various intermediates required in its synthesis.

All manufacturing, sales and service rights for the Quarie "Maximizer" computer controller have been acquired on an exclusive basis by

Look what happened to the corn we took off the cob



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For all phases of paper manufacturing and converting . . . beaters, tub sizing, coatings, calendering, corrugating and laminating.

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COLUMBUS, GEORGIA, 2319 Hamilton Road
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ST. LOUIS, MISSOURI, 721 Pestalozzi Street
LaGRANGE, GEORGIA, 506 Springdale Drive
PHILADELPHIA, PENNSYLVANIA, Bourse Bldg.
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NEW ADVANCES IN LOW COST QUALITY PULP SCREENING

IMPCO CENTRIFUGAL SCREENS FOR:

Washed Stock Screening
Hot Stock Screening
Sealed Black Liquor Knotting
Fibre Length Classification
Paper Stock Cleaning

The new Impco Centrifugal Pulp Screen is the latest example of the progress made toward the ultimate in low cost quality screening. This screen incorporates many improved principles and features such as:

- — a stock inlet allowing direct top, bottom, front or rear infeeding which simplifies installation piping;
- — a tangential inlet which changes flow direction from linear to rotating, yet retains velocity head;
- — a special stator which provides uniform internal distribution of pulp;
- — a patented high-efficiency rotor which increases capacity without additional horsepower;*
- — a bottom accepted stock outlet permitting all sub-floor piping;
- — a full length quick-opening door for routine accepted stock sampling;
- — an accessible rejects outlet for tailings inspection or sampling.

These features are resulting in peak capacities and high discharge consistencies at lowest horsepowers. Reject richness is readily controlled. Engineered simplicity is characteristic of the entire line of Impco Centrifugal Screens which require very little operating attention and mechanical maintenance.

* U. S. Patent No. 2,845,848.

IMPROVED MACHINERY INC.

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In Canada, Sherbrooke Machineries Ltd., Sherbrooke, Quebec

News of the Industry . . .

Fischer & Porter Co. of Hatboro, Pa. An official of **Quarie Controllers**, of Canton, Mass., whose firm developed the unit, evidenced their enthusiasm for the agreement by stating that "we feel Fischer & Porter's manufacturing, sales and service facilities offer industry the optimum — a condition highly compatible with the basic principle of the Maximizer itself".

Wisconsin Wire Works of Appleton, Wis., is now building a new addition to its plant, adding 17,000 sq. ft. of floor space. With the new addition, the company hopes to render better service to its customers, both in delivery and quality control.

American Potash & Chemical Corp. has started an expansion project at the company's sodium chlorate plant at Aberdeen, Miss. The cost, which is set at $1.25 million, will raise production capacity at Aberdeen from 15,000 to 22,500.

Plans have been made by **Allis-Chalmers Mfg. Co.** for the acquisition of **Valley Iron Works Co.** The Boards of Directors of both companies have approved the transaction and it is now subject to final approval by the Valley Iron Works Co. stockholders. Valley Iron Works will be operated as a wholly-owned subsidiary of Allis-Chalmers under the name of **Valley Iron Works Corp.** and will continue to manufacture papermaking machinery. This change is expected to become effective about October 30, 1959.

Morris Machine Works, Baldwinsville, N. Y., has revealed plans to construct an industrial plant on its present building site in Baldwinsville. The new one- and two-story building is scheduled for completion in spring of 1960, and will provide nearly 60,000 sq. ft. of space for production and administrative offices.

Plans have been announced by the **General Chemical Division of Allied Chemical Corp.** to add a liquid aluminum sulfate plant to its site at El Segundo, Calif. With the completion of this new facility, General Chemical will have 29 plants producing dry or liquid alum in the United States and Canada.

Coming Events

TAPPI

October 7-9—Fourth Deinking Conference, Roger Smith Hotel, Holyoke, Mass.
October 12-15—Fourteenth Engineering Conference, Penn-Sheraton Hotel, Pittsburgh.
November 4-6—Thirteenth Alkaline Pulping Conference, Robert Meyer Hotel, Jacksonville, Fla.

PIMA

October 2-3—Connecticut Valley Div. (joint meeting with New England Section of TAPPI), Great Barrington, Mass.
October 8-10—Pennsylvania-New Jersey-Delaware Division (fall meeting), Traymore Hotel, Atlantic City, N. J.
October 14-16—Southern and Southeastern Divisions (joint fall meeting) Edgewater Gulf Hotel, Edgewater Park, Miss.
October 22—Miami Valley Division, Manchester Hotel, Middletown, Ohio
November 5—Michigan Division, Hotel Harris, Kalamazoo, Mich.
December 3-5—Pacific Coast Division (annual fall meeting), Olympic Hotel, Seattle, Wash.
January 21—Michigan Division (joint meeting with Kalamazoo Valley section of TAPPI), Hotel Harris, Kalamazoo, Mich.
February 18—Michigan Division, Hotel Harris, Kalamazoo, Mich.
April 23, 1960—Michigan Division (ladies night), Hotel Harris, Kalamazoo, Mich.

OTHER MEETINGS

October 19-23—47th National Safety Congress, Conrad Hilton, Chicago.
October 25-28—1959 Annual National Conference of Controllers Institute of America, Penn-Sheraton Hotel, Pittsburgh.
November 4-6—Eighth Annual Western Training Conference of the American Society of Training Directors, Olympic Hotel, Seattle, Wash.
November 4-6—Eastern Analytical Symposium and Instrument Exhibit, Hotel New Yorker, New York.
November 17-20—PMMI Packaging Machinery Show, New York Coliseum, New York.
November 16-18—Twenty-first Annual National Packaging Forum of the Packaging Institute, Statler-Hilton Hotel, New York.
November 30-December 4 — Twenty-Seventh Exposition of Chemical Industries, New York Coliseum, New York.
December 1-2—Pulp, Paper and Paperboard Industrial Waste Conference, Edgewater Beach Hotel, Chicago.
January 25-28—Plant Maintenance & Engineering Show, Convention Hall, Philadelphia, Penn.

ATKINS Chipper Knives give you consistently better quality chips . . . with less time out for sharpening. ATKINS special alloy steel and exacting heat treating methods assure the *perfect combination of hardness and toughness* to cut clean and fast without splinters or sawdust . . . and to withstand the heavy shocks of high production runs.

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Continuous Pulping

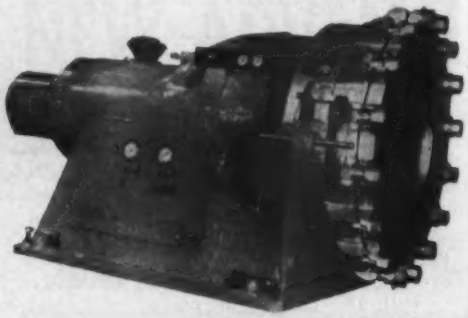
CONTINUOUS DIGESTER

American Defibrator, Inc., offers equipment to meet various demands for continuous pulping of cellulose raw materials. Complete units or components are available for economical production of controlled grades of pulp for the Paper, Wallboard and Roofing Felt Industries.

American Defibrator Continuous Digesters with Screw Feeders or Rotary Feeders and Asplund Defibrators produce pulp at substantial savings in production cost. The capacity of the Defibrator Continuous Digesters ranges from 50 to 250 tons of pulp per day or more. Various raw materials may be used, such as softwood, hardwood, cotton linters or bagasse.

Non-chemical high yield pulps produced by the Asplund Defibrator are used for the manufacture of hardboard, insulating board and roofing felt. Semi-chemical pulps for corrugating medium as well as bleachable grades and pulp for newsprint furnish are also produced by the Defibrator Continuous Digester.

The large size Type D-42 Defibrator is now available and has been developed to meet the current trend in the Pulp and Paper Industry towards larger production units. This Defibrator is driven by an electric motor directly connected to the main shaft by a gear coupling. The grinding pressure is hydraulically controlled and easily adjusted. Therefore uniform, high quality pulp is produced and D-42 units now in operation indicate capacity of about 100 tons/day of non-chemical and 200 or more tons/day of semi-chemical pulp.



TYPE D-42 Defibrator

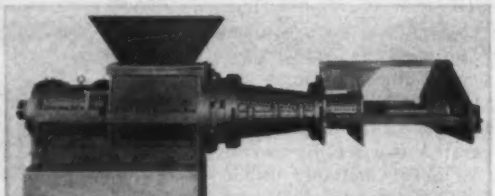
ASPHALT DISPERSION PROCESS

The Asplund Defibrator for treatment of waste paper stock in the "A-D" system has found an extensive application in the Paper Board Industry in order to disperse asphalt, waxes and similar materials in the waste paper. As a result, a clean and sterile sheet is made on the paper machine at considerable savings, since less expensive waste paper can be utilized. Processing costs for steam, power, labor and maintenance are low. No chemicals are required. Total annual capacity installed now exceeds 1½ million tons of waste paper. Inquiries receive prompt attention.

Continuous Dewatering

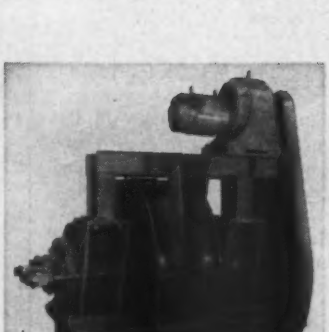
THE DEFIBRATOR BARK PRESS

The Defibrator Bark Press was developed for continuous dewatering of bark for use as fuel. Processing capacity is about 4 to 5 tons per hour, bone-dry basis. The power consumption at this rate runs between 60 and 75 H.P. The continuous operation reduces labor and maintenance costs to a minimum.



THE DAVENPORT DEWATERING PRESS

The Davenport Continuous Press extracts water from fibrous materials, such as various grades of waste paper stock, kraft, sulphite or groundwood pulp. The Model 1B Press has a capacity of about 75 tons/24 hours of pulp, bone-dry basis, dewatering the stock from about 10% consistency to about 35% consistency or higher. The wet pulp entering the press is squeezed and dewatered as it passes through the press and the squeezed out water escapes through the screen plates and drains off at the bottom of the press. There are practically no fiber losses. The pulp is handled very gently by the press which operates at low speed. Therefore, no "fish eyes" are formed in the pulp during the dewatering. The Davenport Press operates very efficiently with low power consumption, high capacity and low maintenance cost. Inquiries receive prompt attention.



AMERICAN DEFIBRATOR, INC. CHRYSLER BUILDING NEW YORK 17, N. Y. West Coast: A. H. Lundberg Mercer Island, Washington

NAMES *in the* NEWS

Crown Zellerbach Corp.

Crown Zellerbach Corp. has announced that Raymond O. Jones of the Gaylord Division, St. Louis, has been transferred to the San Francisco headquarters. In this new position, Jones will actively assist in the planning and coordinating of operations in the packaging division.

William L. Meyer was elected controller of Crown Zellerbach Corp.

Gilbert O. Baker Jr., director of timber accounting policy, was named to Meyer's former position as assistant controller.

Louis J. Liati was appointed district sales manager in charge of chain stores.

Robert Boss, recently consumer products district sales manager in Portland, Oregon, was named district sales manager for retail sales in Los Angeles.

Eastman Kodak Co.

The election of Austin J. Gould as vice president of Eastman has been announced. Gould has been manager of film manufacturing at the company's Kodak Park Works in Rochester. Gould will now be a member of general management and will be concerned with the planning and coordination of the company's manufacturing activities in the field of sensitized materials — photographic films, papers and chemicals.

Container Corp. of America

Harry E. Miles, vice president, will now be responsible for all the company's corrugated shipping container plants with the exception of West Coast properties. This appointment follows the resignation of Donald H. Brewer, senior vice president in charge of the Container Division.

David R. Riggs has also resigned as vice president of the company's Eastern Container Div.

The appointment of Edwin A. Guerrero as Ohio valley sales manager for folding cartons has been announced by Container. Guerrero will continue as special account representative and in addition will be affiliated with the development of the Ohio valley market.

Champion Paper & Fibre Co.

Champion Paper has established a new four-man general production services staff for the company's operations group at the firm's general offices in Hamilton, Ohio. The four men elected to serve on the staff include: Joseph Piggot as director of coated products, Malcolm Lyon as director of pulp manufacturing, J. E. Hall as acting director of paper manufacturing and Keister Smith as assistant to the director for coated products.

Another group formed, is a six-man planning staff for the converting products group at Hamilton, Ohio. This group has been assigned to assist Dwight J. Thomson, executive of sales and profits goals, production executive vice president, in studies of sales and profits goals, production expansion, new ventures, products and trends in the field. The staff includes: Charles G. Ellington, who will head the group as director, Robert A. Koenig, John M. Stevenson, William A. Pogue, Harvey H. Haines and Robert D. Keppler.

The Carolina Division located at Canton, N. C., for Champion Paper has announced promotions and position changes for six management men. Carl T. Welte and Willis Kirkpatrick have both been named assistant division managers. Welte previously served as production manager and Kirkpatrick as assistant to the division manager. Replacing Welte as production manager will be James E. Wilkinson, who has been promoted from manager of the process controls department. W. J. Bull will replace Wilkinson in this position.

Harold Morris, formerly assistant production manager at Champion's Texas Division, has become assistant production manager.

Joshua A. Ward Jr. has become division engineer at the Canton plant. He will replace Cedric A. Stone who has retired after 30 years of service to the company.

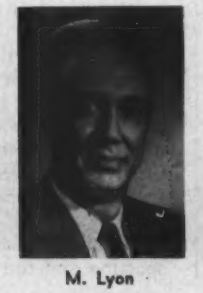
W. Kirkpatrick

J. E. Wilkinson

W. J. Bull

H. Morris

J. Piggott



M. Lyon

J. E. Hall

K. Smith

C. T. Welte

J. R. Ward Jr.

Allied Personalities

Beloit Iron Works has announced the promotion of two key personnel. **W. E. Watson** has been named vice president and general plant manager for Beloit Iron Works. **J. R. Walsh** has been named to a similar position at Beloit Eastern Corp.

Dr. David G. Braithwaite has been assigned to the post of executive vice president in charge of manufacturing, research and development for Nalco Chemical Co. Braithwaite formerly headed Nalco's catalyst division and most recently has been in charge of the company's program of expansion and diversification within the chemical industry.

James E. Stanley has been appointed to the position of felt sales engineer by the Huyck Felt Co. of Rensselaer, N. Y. Stanley will serve the company in Virginia, West Virginia and portions of Tennessee and North Carolina. He joined Huyck in 1955 and worked in all phases of felt design and manufacture.

Carroll Taylor, paper mill and corrugating technical service representative for Hubinger Co. of Keokuk, Iowa, has been transferred from Keokuk to Dayton, Ohio and will give service to the company's customers in that area. Hubinger has also announced a newly created position of manager of paper mill sales. This position was given to **Howard Peper**, who has been a Hubinger sales service representative in the Chicago area. He will continue to make his headquarters in Chicago.

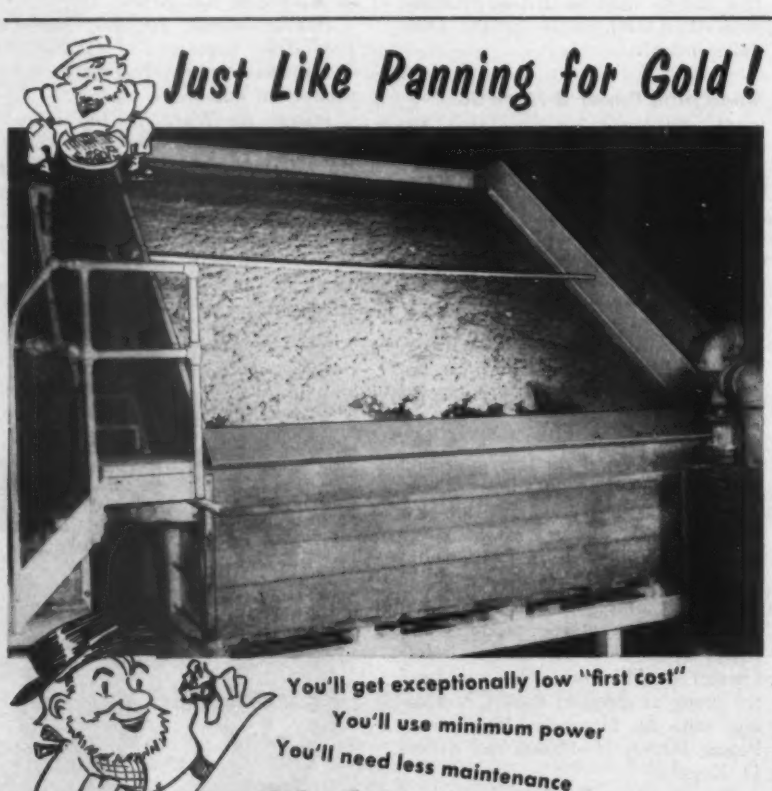
Philip D. Case has been appointed as sales representative in the New York State area for Bauer Bros. Co. of Springfield, Ohio. Before joining Bauer, Case was associated with West Virginia Pulp & Paper Co.

Sandy Hill Iron & Brass Works has appointed **Robert E. Smith** as staff engineer with duties involving research and development and special assignments. Smith has had more than 10 years' experience in pulp and paper machinery design and engineering.

The Industrial Chemicals Division of American Cyanamid Co. has appointed **Dr. Charles R. Witschonke** as manager of paper chemicals research. Until his new appointment, he was manager of refinery and mining chemicals research at Stamford. In his new position, Witschonke will direct research on a wide range of synthetic resins, wax emulsions, sizing agents and specialty chemicals used in the production of paper.

Merwin B. Clapp, formerly of Chicago Bridge & Iron Co.'s general sales staff, has been transferred to the company's Chicago district office as a contracting engineer. Clapp has been with CB&I for 13 years, first working as a design engineer in the Birmingham plant. He was later transferred to the Birmingham sales office and then to general sales in Chicago.

P. H. Glatfelter Co. has announced the following changes in its reorganization program of the Research and Quality Control departments: **Millard M. Munts** has been appointed quality control manager and will be responsible for the overall activities of the department. **Olin V. Hyde** was promoted to chief of quality control engineering section with the responsibility for the engineering and statistical aspects pertaining to the quality control functions. **Kenneth S. Whitler** has been made chief of the inspection and testing section. He will


Just Like Panning for Gold!
You'll get exceptionally low "first cost"
You'll use minimum power
You'll need less maintenance
with the
Kalamazoo "Side Hill" Washer
These practical slide washers give a better and more effective wash job than other washing methods. They may also be used as thickeners and savealls. These units are designed by Kalamazoo engineers — experts in serving the paper industry for more than 90 years. Our experience enables us to completely prefabricate the units of top quality materials. Installation supervision can be furnished.
Laboratory size units are available for experimental purposes in determining the proper angle and screen mesh.
Write today for information on capacities and cost estimates.
WOOD TANK DIVISION
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KALAMAZOO, MICH.

CLINTON can do it with Corn

simple? no!

as complex as life itself

At Clinton we learn new things about corn almost every day.

Corn is sustenance and shelter. It is clothing and confections—bread and beer. Corn is life—but only with the help of man. Its seed left in the field will wither and rot—but planted and cultivated by man it will drive roots three feet into the ground and stalks as high as fifteen feet into the air. It will thrive and create the raw materials for the well-being of man.

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Clinton starches and dextrins will always meet your most exacting specifications. Consult your Clinton salesman. He will provide product information, arrange for prompt technical service, or assist you in any way possible.

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CORN SYRUPS • DEXTROSE • STARCHES • DEXTRINS
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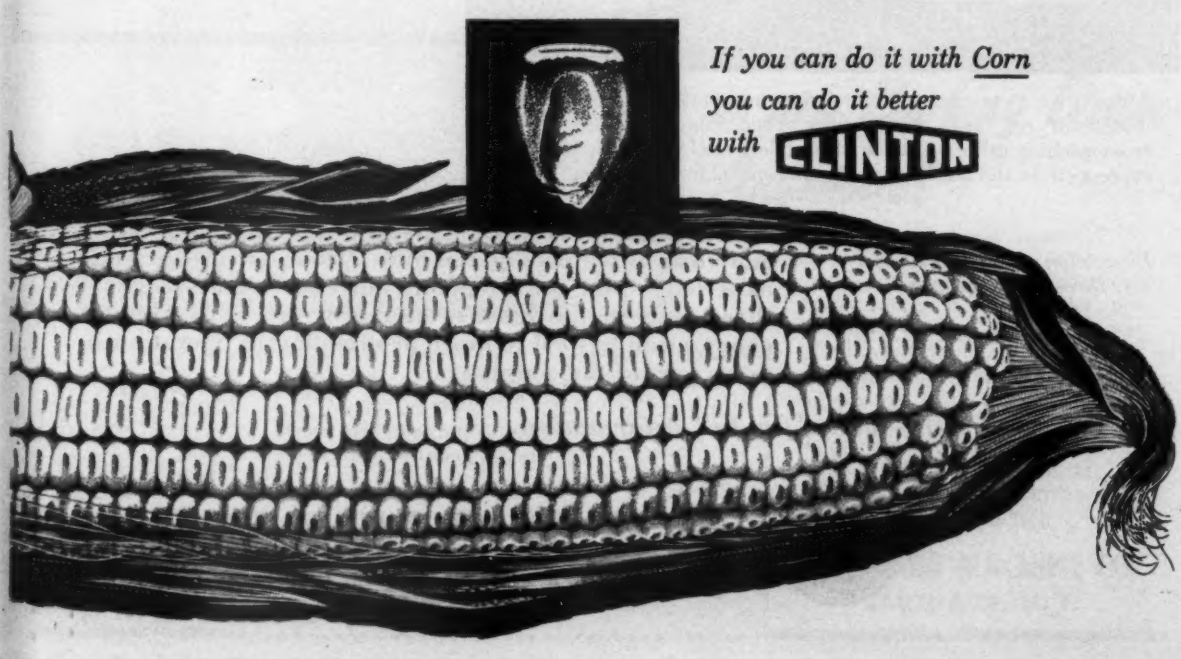
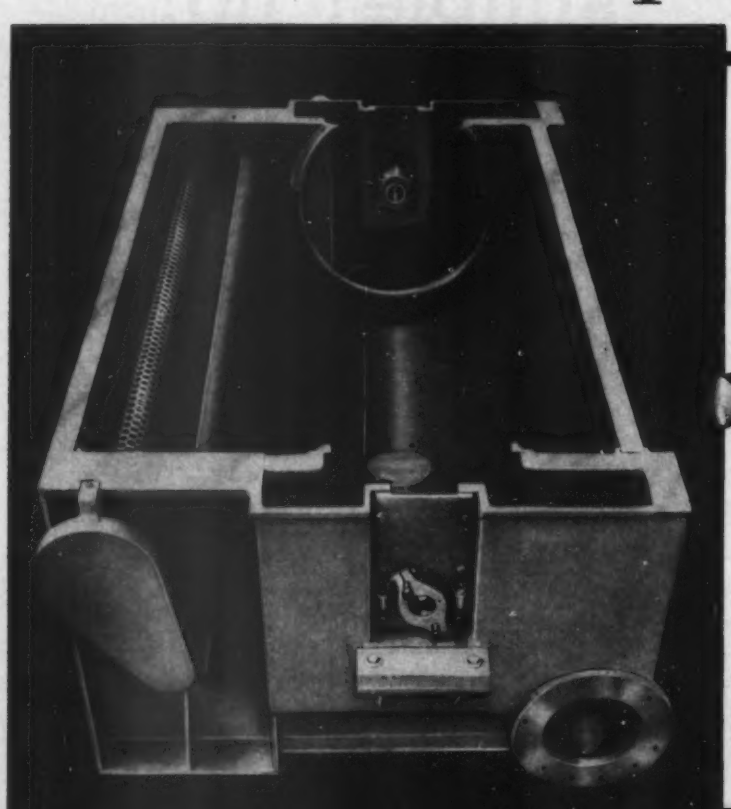


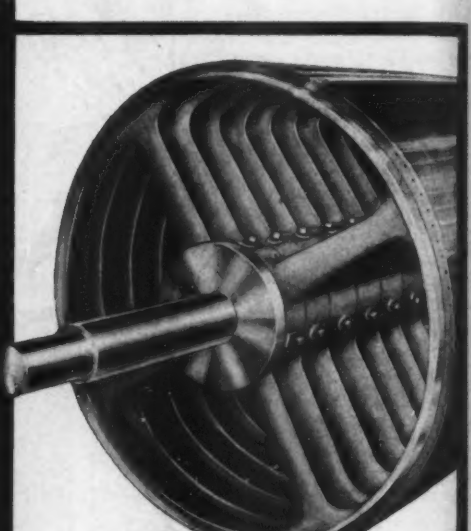
If you can do it with Corn
you can do it better
with CLINTON

SANDY HILL CYLINDER MOULD VATS

help you make better paperboard



SANDY HILL VATS offer superior inflow and outflow capacity. Inflow distributor roll gives better fiber dispersion and uniformity of cross-machine caliper. Can be all stainless steel, cast iron ends with cypress circle and baffles, or copper-or-monel-lined cypress.



CYLINDER MOULDS have streamlined spiders on a large-diameter shaft with anti-friction bearings. Special construction assures rigidity of spider. Together with Sandy Hill vats, they offer *final* control in determining sheet formation.

Illustration shows counterflow vat. Direct flow vat available.

Tell us your vat requirements in terms of your product and your mill's production aims. Then, let us put your experience and ours together and see about reaching those aims in the most economical way. This kind of cooperation has led to more profitable mill operation in every part of the country!

• ***Phone or write today, for full information.***

THE
SANDY HILL
IRON AND BRASS WORKS
HUDSON FALLS, N. Y.

Allied Personalities . . .

be responsible for all inspection and testing in the mill. Ceo. A. Bortner will take over the duties as inspection foreman of the pulp mill and Robert Moul will assume similar duties for the mill section. L. Henry Smaine will be transferred from research to the technical service department and will be group leader. Donald A. Yateman has been promoted to supervisor of paper research.

Robert G. Taber has been appointed by Beloit Iron Works as Eastern representative for the firm. He has been associated with Beloit for 15 years as an engineer and salesman.

Vincent P. Owens will assume a new position as assistant general sales manager in charge of industrial products for Combustion Engineering Inc. For the past 10 years, Owens has been manager of paper mill equipment sales. He will continue to supervise the company's paper mill division sales in addition to sales of industrial steam generators, Raymond Division equipment and fabricated products. E. L. Smith has been appointed as manager of paper mill equipment sales.

Necrology . . .

Dr. Lee F. Hawley

Dr. Lee F. Hawley, one of the founding pioneers of the U. S. Forest Products Laboratory, 50 years ago, and a noted research chemist, died in Madison Wis., last August. He joined the Forest Service in 1907 as a chemist. He remained at the Laboratory until his retirement in 1942 because of eye troubles. For a period in 1944, Dr. Hawley was a consultant to the federal Office of Scientific Research and Development. During both World Wars, he served as a consultant to the Chemical Warfare Service. Author of many Laboratory research publications, Dr. Hawley was a co-author with Dr. Louis E. Wise of "The Chemistry of Wood" one of a series of American Chemical Society publications. He also wrote a textbook on "Wood Distillation."

Carle C. Conway

Carle C. Conway, former president and chairman of the board of Continental Can Co. for 24 successive years, died in Lake Placid, N. Y., last August. For 45 years, he was a leading figure in the development of the American packaging industry. He was elected a vice president and director of the Continental Can Co. in 1913. Conway was a principal founder of the Can Manufacturers' Institute and sponsored a large number of important research activities by that organization and the National Canners Association. In 1950, he established the Carle C. Conway Scholarship Foundation, which in the years since, has awarded 46 scholarships to children of Continental employees.

Walter C. Carlson

Walter C. Carlson, former president of the Milwaukee Association of Commerce and of the old Milwaukee Paper Box Co. died last September. Carlson organized and promoted the Milwaukee Paper Box Co.

Thorough Barking with Minimum Brooming

and the Sturdiest Construction found in any Barking Drum Anywhere!

In successful use since 1938, CARTHAGE BARKING DRUMS are made of massive 1⅛" plates that assure years of low-maintenance operation in this brutal service. Fluid drive results in smooth start and prevents back lash. Patented supporting shoe dampens shock loads — one of the many features that contribute to the exceptionally long life and low maintenance cost of the exclusive Carthage integral drum construction.

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CARTHAGE, N. Y.

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CARTHAGE, NEW YORK

Please send free copy of Bulletin BD-1058 describing Carthage Barking Drums.

Name.....

Firm.....

St. or Rd.....

City..... Zone.... State.....

D

Necrology . . .

in 1905, where he was president and treasurer. Several of the most generally used machines for making paper boxes were invented at the company. Carlson sold the firm in 1938. He was also the first president of the National Paper Box Manufacturers' Association.

Harry S. Van Ryper

Harry S. Van Ryper, sales representative for John W. Bolton & Sons Inc. and its Emerson Mfg. Co. Div. since joining that firm in 1950, died last August after a brief and serious illness. He handled the territory of Pennsylvania, New Jerssey and Delaware. Van Ryper was also a committeeman in PIMA's PenJerDel Div. for the last three years.

Edwin W. Bebie

Edwin W. Bebie, manager of the Bindarene, Core and Wrapper Sales Div. of International Paper Co. since 1945, died at his home in Demarest, N. J., last month. He joined the company in 1925 where he specialized storeroom inventory control for the company's Northern Div. mills. Bebie then moved to the company's engineering department in 1930, and assisted in the company's northern mill modernization program.

Edward C. Hilfert

Edward C. Hilfert, president of Riverside Paper Corp., died last September after a short illness. He became affiliated with the paper firm in 1919. Before becoming president, he was vice president and general manager. Hilfert was also a director of Spaulding Pulp & Paper Co. and the Wisconsin Paper Group.

Tracy E. Lloyd

Tracy E. Lloyd, vice president and director of Hinde & Dauch Paper Co. of Canada Ltd., Toronto, Ont., died last August at his Toronto home. He joined the firm when it was first organized in 1909. Lloyd was also a past president of the Canadian Association of Purchasing Agents.

Braxton M. Ryan

Braxton M. (Jack) Ryan, senior representative, who had been with Asten-Hill Mfg. Co. for almost 30 years, died last August. Representing the firm in the Southern states, he made his home in New Orleans, La.

Irwin A. Reiss

Irwin A. Reiss, vice president and general manager of Orchard Pacific Paper Co. of Los Angeles, died last August in a Los Angeles hospital. He founded the Associated Paper Converting Corp. His company was acquired by Orchard Paper Co. of St. Louis, Mo., in 1956, where the name was changed to Orchard Pacific Paper Co.

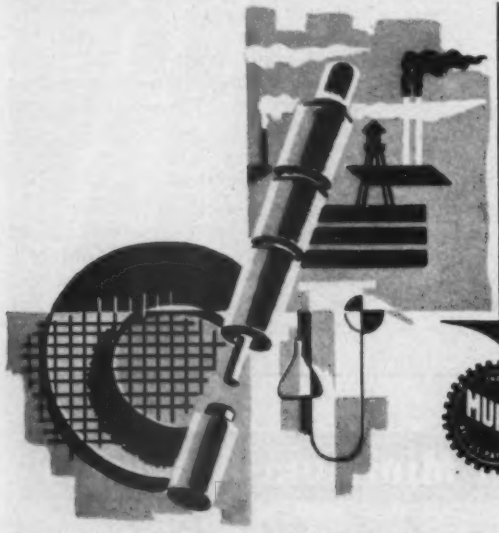
Elmer R. Tieberman

Lunkenheimer Co. of Cincinnati, Ohio, has announced the death of Elmer R. Tieberman, a retired sales executive of the company. Tieberman was manager of Lunkenheimer's Central Division, with headquarters in Dallas, Tex., prior to his retirement.

Carlton B. Smith

Allis-Chalmers Mfg. Co. has announced the death of Carlton B. Smith, a director of service for Allis-Chalmers Industries Group in Milwaukee.

Beginning in 1914, Smith served the company in many capacities until his appointment in 1957 as director of service.



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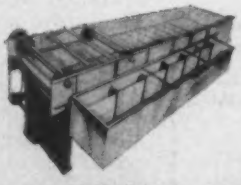

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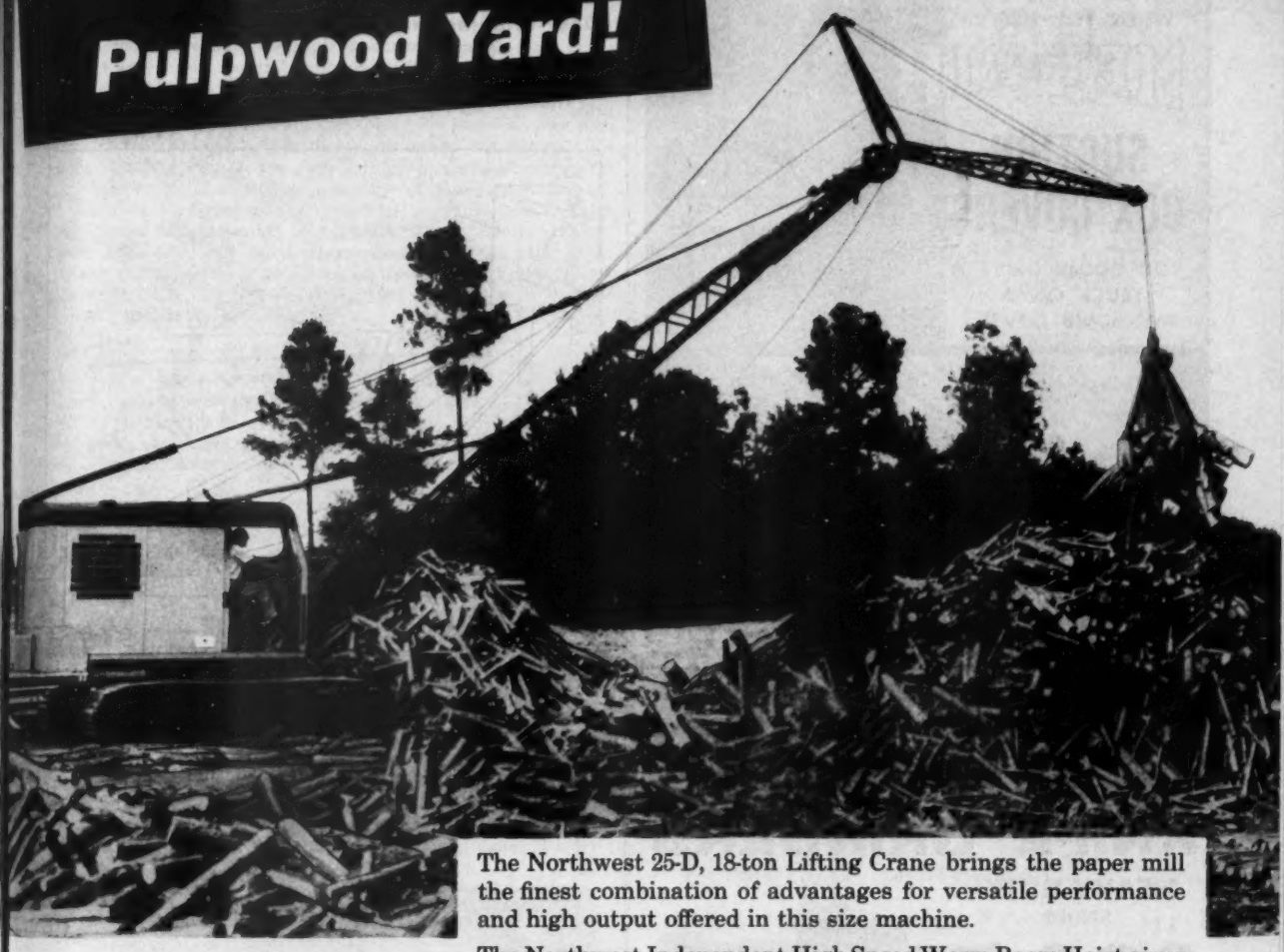

The Northwest 25-D, 18-ton Lifting Crane brings the paper mill the finest combination of advantages for versatile performance and high output offered in this size machine.

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FOREIGN ABSTRACTS

Fiber-oriented sheets made on a laboratory scale

A sheet-making apparatus is described. This was constructed at the Finnish Pulp and Paper Research Institute with a view towards making sheets in which fibers were oriented, mainly in one direction.

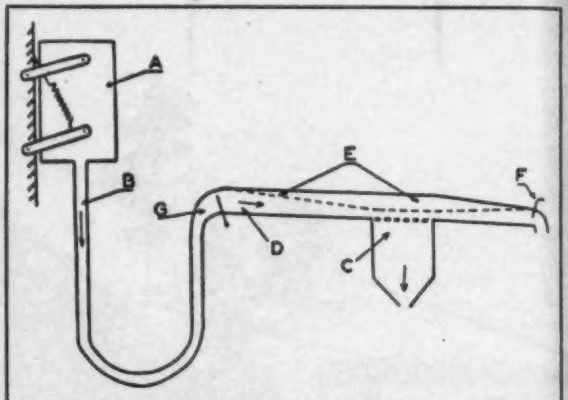


Fig. 1. Sketch of apparatus used for making fibre orientated sheets.

Fig. 1 gives a sketch of the instrument which was designed by J. Paronen. The pulp is brought from tank A through hose B to the wire of the regular sheet mold C by opening a valve G. Tank A is built on springs so that the surface of the pulp in the tank remains at approximately a constant level, as measured from the plane of the wire C. In part D, the cross-sectional area of which can be regulated by raising or lowering the movable cover E (by means of a regulating screw) and the velocity of the pulp is increased and the fibers are oriented in the direction of the current. Further orientation takes place on the wire where a small overflow through valve F "combs" the fibers on the wire in the direction of the flow.

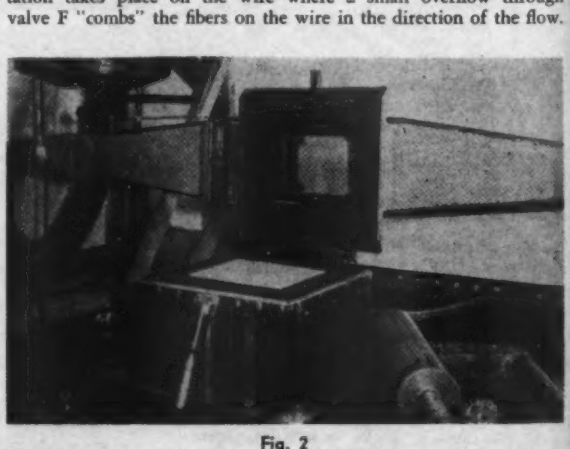


Fig. 2

Fig. 2 shows the opened, new sheet-making apparatus and a sheet actually on the wire. Properties of the fiber-oriented sheets, made in the laboratory, were compared with those of mill products having similar qualities. As far as strength properties are concerned, the laboratory sheets were rather similar to the mill products.

A factor which caused differences in these properties were differences between conditions of drying in the mill and in the laboratory. Owing to these, there were some differences between machine and cross-machine properties, which were somewhat greater

in papers made in the mill than in the laboratory.

With regard to the two-sidedness of the sheets, the fiber orientation was found to be somewhat greater on the wire side than on the upper side of the sheet in the case of labor-sheets, but these differences were only slight.

Seven references, eight figures and six tables are included. M. Toroi. *Paperi ja Puu* (Finland) 41, No. 5,271-279 (1959) (in English).

Fines from a sulfite pulp

Fines from unbleached spruce-sulfite pulp, separated by means of a Schibbye-model pitch remover, when obtained from the sulfite mill were slimy and when dried formed a horn-like cake that could not be powdered. Since the ash content of this material was high, it was (prior to any oven drying) pressed and suspended in dilute hydrochloric acid so as to dissolve most of the ash.

The fines were then filtered, washed to neutrality, homogenized in a mixer and suspended in a large volume of alcohol, to remove water and pitch. (A moisture determination was made prior to any extractions so as to determine the total dry matter in the acid-treated sample.) The fines were then extracted with alcohol-benzene and finally with acetone, dried at 40°C. and then at 100 to 105°.

The treated dry sample was, in part, dust-like and in part made up of fiber bundles. By weighing the dried sample, the extractives originally present, were determined by difference.

Properties of the short-fibered fines as compared with those of a normal unbleached sulfite pulp are shown in the table. The wood rays in these fines were not the only causes for unusual

	Short fibre fraction	Normal cellulose
Extractive content %	26.3	0.9
Ash " "	0.62	0.67
Lignin " "	11.1	1.9
Pentosan " "	8.4	5.8
Uronic acid " "	2.23	1.39
Carboxyls m.eq./100 g cell.	19.2	4.05
Cu-number	2.4	1.3
Viscosity cP	7.6	40.5
α-cellulose content %	82.7	88.8

properties, even though the high pitch content was characteristic of these cells. The properties can probably be traced in part to the "cellulose slime", which could not be purified. The fines contained up to 26 per cent extractives, and the carbonyl and carboxyl contents were also high. The viscosity was lower than usual. The fines were high in hemicelluloses, which made beating of the cellulose easier, but giving a very weak sheet.

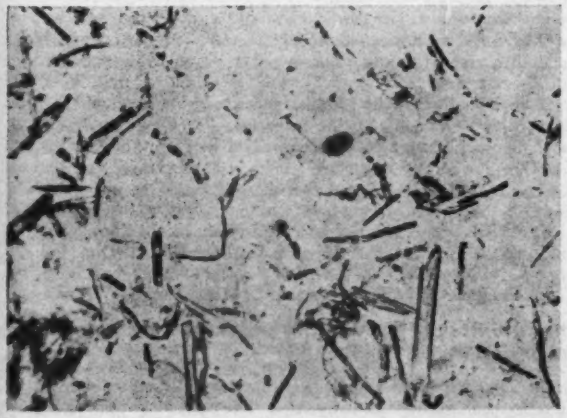
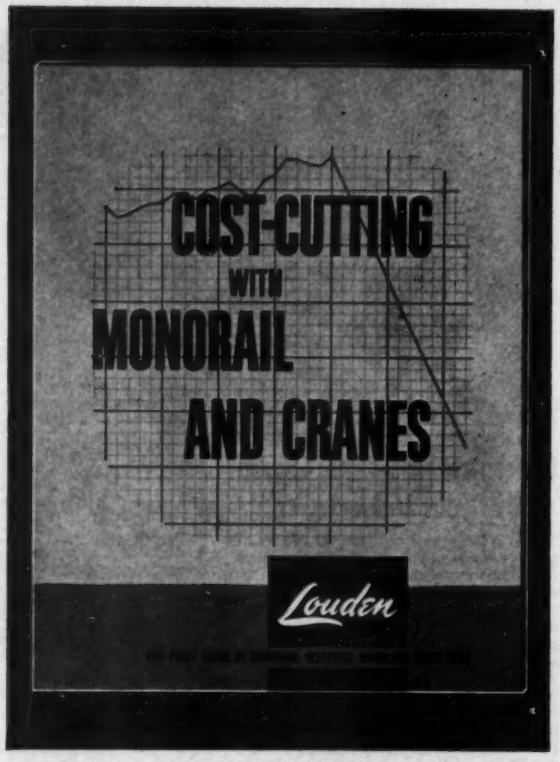


Fig. 3

The fines were (with difficulty) classified and the bulk (on a 100 mesh/cm. screen) is shown in Fig. 3, most of which contains parenchyma cells and pointed ends of tracheids. The authors feel that manufacturers would be justified in discharging such gelatinous fines into the sewer.



(See description on page 511 of this issue, Item No. 44.)

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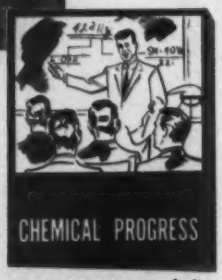

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R. H. Roschier, Juhani Ahava and Uolevi Ilvonen. *Paperi ja Puu* 41, No. 4a, 133 to 139 (1959) (in English). Ten references, 12 tables and five figures are given.

Studies in semi-chemical pulping

This is one of a series of papers published in Japan, and deals with the effects of adding alkaline chemicals to the cooking liquor in pulping red pine or birchwood with neutral sodium sulfite.

The chips were pulped both with and without the addition of alkali, using a liquor-to-wood ratio of 5 to 1, a total sulfite (calculated as sulfur dioxide) of 2.5 per cent and an initial heating period of 100 minutes to maximum temperature (185 deg. C.). The digestion at maximum temperature was a half hour for birch and two hours for pine.

The addition of sodium carbonate and more especially sodium hydroxide hastened the rate of digestion, but only up to a certain limit, beyond which the sodium hydroxide acted as a delignifying agent and thus impeded the sulfonation of the lignin. Sodium carbonate, sodium hydroxide and even calcium hydroxide failed to exert a true buffering action; they functioned simply in keeping the liquor from becoming acidic.

On the other hand, sodium bicarbonate served as a buffer. At a constant sulfur dioxide concentration, the amount and type of alkali added to the cooking liquor did not affect the strength properties of the resulting pulps (in tests with handsheets). These properties depended largely on the pulp yield.

Within the semi-chemical pulp range, the Roe number was a function of the pulp yield, but below this range, the Roe number changed relatively little despite marked changes in yield.

When alkali was added to the cooking liquor, and the pulp yields decreased after a definite time period, the lignin content of the pulp actually increased over that of pulps obtained without alkaline additions. The introduction of alkali into the cooking liquor caused darkening of the pulps in proportion to the amount of alkali added. Unless additions of sodium carbonate or bicarbonate were excessive, any evolution of carbon dioxide in the cook failed to increase significantly the digester pressures (in the case of birch).

Three references, three tables and 19 figures are given. Isao Shimoda and Akihiro Shindo. *J. Soc. Textile and Cellulose Inds.* (Japan) 14, 212-219 (1958) (original in Japanese with English summary).

Chemical pulps from two Indian grasses

Laboratory and pilot-plant runs were made in the production of pulps for writing and printing papers from two grasses—*Cymbopogon martini* and *Sehima nervosum*. Both the soda and kraft processes were used.

The pulps were then bleached in two stages with bleaching powder, omitting the usual intermediate-alkaline treatment. The pulp, whose fiber length averaged 1.05 mm. was beaten and treated with rosin size, alum, China clay and ultramarine blue, and then converted into printing paper on an experimental fourdrinier machine.

Actual samples of the printing paper, which was slightly cream-colored, were bound into the magazine. The formation was good and the strength properties appeared to be satisfactory, but since the fibers were so short, any commercial operation using these grasses would have required that the grass pulp be mixed with a suitable proportion of long-fibered pulp, such as that from bamboo.

Seven tables and two references are given. M. G. Karnik (Cellulose and Paper Branch, Research Institute, Dehra Dun India). *Indian Pulp and Paper* 13, No. 9, 417-23 (1959).

Possibilities of preventing pulpwood shortages in Poland

In Poland it has been estimated that sawmills utilize only about 65 per cent of their raw material. The fraction of saw-dust etc. which contains fibers 1 to 5 mm. in length, is suitable for pulping, and represents 55 to 60 per cent of the saw mill waste. This could be converted into pulp for wrapping papers, and possibly in admixture with higher grade pulps for use in the manufacture of other paper grades.

If this were done, it would provide 135,000 additional tons of pulp and save about 7000 hectares of forest trees annually. The

author suggests that pulp mills be constructed to use exclusively saw mill waste, and that these be built in the vicinity of the large saw-mill district, thus meeting transportation problems.

Three tables, two figures and five references are given. A. Polanski. *Przeglad Papierniczy* 14, No. 10,295-6 (1958) (Original in Polish); through *Abstr. Bull. Inst. Paper Chem.* 29, 1541 (1959).

Researches on dissolving pulps

This gives a survey of investigations on dissolving pulps and viscose carried out at the Finnish Pulp and Paper Research Institute in Helsinki. Most of the results have been published previously.

The work was divided into 2 parts: that dealing with the production of dissolving pulps, and that involving viscose studies. In the first part, chip quality, fiber fractionation, bleaching methods and agents are all viewed as factors affecting the final pulp properties. In the second part, the preparation of viscose, and the factors that affect viscose properties are reviewed.

A brief section also deals with analytical methods developed at the Institute and their applications.

Twenty-three references, six graphs and six tables are included. Hannes Sihtola. *Paperi ja Puu* 41, No. 4, 233-239 (1959) (original in Finnish with English summary).

Behavior of bag paper under dynamic loading

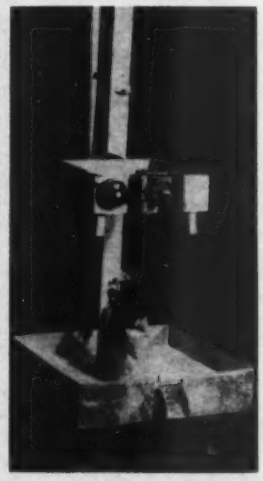

Fig. 4

In the present study, a few drop-test parameters were studied. These were drop height, weight and type of commodity. Strength properties of four types of paper, used in bags, were also determined. These included basis weights, breaking length, elongation and mullen tests.

The bags contained asbestos fibers, asbestos flour, sand or yellow peas. The relation between the average drop number on the one hand and the drop height and weight of commodity on the other was shown to be closely exponential when the exponents of the two latter quantities were not significantly different. Under these conditions there is an exponential relationship between the mean-drop number and the potential energy spent in the drop.

In the present study, the exponent was 2.2. The experimental materials were all 1-kg. block-bottom bags; the individual bags were tested without varying any drop parameter.

The drop apparatus is shown in the Fig. 4. From the exponential equation, a characteristic quantity (the limiting energy) could be derived. A drop-testing program could be formulated, from which this quantity could be determined by dropping each bag only once.

Four tables, eight figures and three references are given. Andersson and C. B. Ihrman. *Svensk Papperstidn.* 62, 303-307 (1959) (in English).

Determination of paper strength after erasures

Samples of the paper sheet are kept as controls and other samples of the same stock are typed with six letters in a specified area; and then, carefully but completely erased. Now the bursting strength of all samples is determined and usually eight replicates are made in both sets. The mean values, in terms of kilograms per square centimeter, are calculated and the differences are reported. The smaller the mean loss in bursting strength, the more resistant was the original sample to erasure.

The results of determinations on 49 samples are reported, both in tabular form and as bar graphs. The sheets tested varied from weights of 48 gr. per sq. meter to 90.8 gr. per sq. meter. Rudolf Mörchen. *Wochbl. Papierfabr.* 87, 359-62 (1959) (in German).

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PATENT REVIEWS

MELVIN NORD*

Measurement of the basis weight of paper

U. S. 2,878,570, issued March 24, 1959, to Godfrey R. Donaldson and assigned to Australian Paper Manufacturers Ltd., describes apparatus for the continuous measurement of basis weight for paper or board.

The apparatus is based on the discovery that basis weight may be determined with reasonable accuracy by using the thickness of an adequately compressed sample strip.

When paper is subjected to high pressure, such as that exerted when the paper is passed through the nip of two rollers, all the occluded air is expelled and compressed cellulose is formed, having a substantially uniform density. Thus, the basis weight is proportional to its thickness.

Reinforced multi-ply paper

U. S. 2,881,072, issued April 7, 1959, to James d'A. Clark and assigned to Fibrofelt Corp., describes a method of making reinforced multi-ply paper.

The paper produced by the process of this invention contains a thin web of reinforcing fibers of substantial length, randomly distributed to impart strength in all directions. The reinforcing fibers may be glass fibers, Dacron, nylon, Teflon, etc.

Bleaching chemical wood pulp

U. S. 2,882,120, issued April 14, 1959, to William B. Stoddard Jr. and assigned to Champion Paper & Fibre Co., describes a process for bleaching chemical wood plup, employing a nitrogen trichloride treatment.

Nitrogen trichloride is applied to chemical wood pulp in the presence of a quantity of water at least equal in weight to the dry weight of the pulp, in the absence of free chlorine, and at a pH in the range of 1 to 4.5 obtained by the addition of a non-oxidizing acid.

Little or no weakening of the fiber accompanies the bleaching. The values for the disperse-viscosity and the bursting and tear strengths of the pulp are substantially the same after bleaching as before.

Semi-chemical pulping process

U. S. 2,882,147, issued April 14, 1959, to Charles H. Davenport and Burton E. Helberg and assigned to Monsanto Chemical Co., describes a semi-chemical process for producing pulp from hardwoods and/or softwoods with an ammonia-base digestion liquor.

The chips are digested in a digestion liquor containing free ammonia as ammonium hydroxide and combined ammonia as ammonium sulfite in the ratio of combined to free ammonia of 3:1 to 6:1. The total ammonia is 10 per cent by weight, based on oven-dry chips being digested. The digestion is carried out at 165 to 170° C. and at a pressure of 120 to 130 psig. for about four hours.

Ammonia and sulfur are recovered from the digestion liquor and the chips are then subjected to an aqueous treatment at about 165°C. They are then refined by mechanical action until reduced to a fibrous pulp, after which, the pulp is treated with a bleaching agent.

Suction roll nozzle

U. S. 2,884,059, issued April 28, 1959, to Alexander E. Stewart and Vivian S. Grater and assigned to Dominion Engineering Works Ltd., describes an improved suction pick-up roll assembly for fourdrinier papermaking machines.

An object of the invention is to simplify the "broke" disposal problem in the case of papermachines, equipped with suction pick-up rolls. The pick-up roll of the present invention is designed to initially pick up only a lead strip, which is cut from the paper web at the delivery end of the forming wire. Then, after the lead strip has been passed therefrom through the press sections and succeeding units of the papermachines, the pick-up roll picks up and delivers the full width of the paper web to the press sections.

*Patent attorney, 17600 Pinehurst, Detroit 21.

Manufacture of wood fiber hardboard

U. S. 2,880,655, issued April 7, 1959, to Basil O. Stewart and assigned to National Gypsum Co., describes a process for the preparation of a dried-wet-formed mat of wood fiber prior to the consolidation thereof by combined heat and pressure.

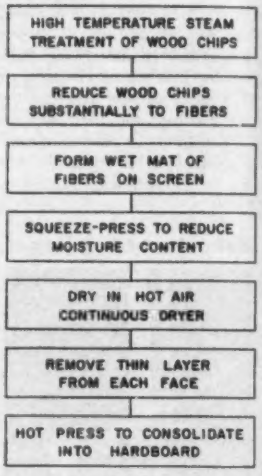

HIGH TEMPERATURE STEAM TREATMENT OF WOOD CHIPS
REDUCE WOOD CHIPS SUBSTANTIALLY TO FIBERS
FORM WET MAT OF FIBERS ON SCREEN
SQUEEZE-PRESS TO REDUCE MOISTURE CONTENT
DRY IN HOT AIR CONTINUOUS DRYER
REMOVE THIN LAYER FROM EACH FACE
HOT PRESS TO CONSOLIDATE INTO HARDBOARD

Fig. 1

As shown in Fig. 1, the process consists of reducing raw wood to chips of a size in the order of ¼×¾ in. across the grain and ¾ in. with the grain. The chips are then subjected to a high-temperature steam treatment to chemically convert some of the ingredients therein, principally the lignins, into a form whereby they will subsequently provide a binder material in the consolidated board. There is also produced by this treatment, a certain amount of water-soluble matter such as wood sugars, which have long been recognized as undesirable, but unavoidable.

The steam-treated chips are then reduced in size substantially to fibers by any known means, such as by defibrators having closely opposed, oppositely rotating discs. The fibrous material, dispersed in an aqueous slurry, is then formed into mats by screen-forming means, such as a fourdrinier machine.

The mats, still containing considerable water, are then squeezed, such as by press rolls, to substantially reduce the water content; and are then air dried, as in a hot-air continuous dryer.

In accordance with the present invention, a thin layer of surface material is then removed from the top and bottom surfaces of the mat; the total material removed amounts to not necessarily more than 2 per cent. Finally, the mat is subjected to hot-pressing to consolidate it into hardboard.

The physical removal of the thin surface layer of the mat has been found to remove a very considerable percentage of the undesirable water solubles present within the mat, which have been known before to be undesirable matter and which were heretofore generally removed by a costly washing of the fibrous material or mat. The success of the mat-surface removal is apparently the result of a migration of substantially all of the water solubles to the surface during previous squeezing and air drying.

It has further been found that under most preferred air-drying conditions, a greater percentage of water solubles tend to migrate to the mat-top surface in comparison to the mat-bottom surface. Accordingly, the advantages of the invention may be better realized by providing for a slightly greater removal of material from the mat-top surface than from the mat-bottom surface.

Atmospheric suction-roll silencer device

U. S. 2,877,694, issued March 17, 1959, to George J. Thiessen, describes an atmospheric silencer device for suction rolls.

In the manufacture of paper, one of the problems is the removal of the water in which the stock is carried to the machine. It is customary to do this by the passage of the stock, supported on a screen, over vacuum or suction boxes. Some of these boxes are on the inside of rotating drums, the low pressure being transmitted to the stock or paper by perforations in the drum surface. As these holes enter or leave the vacuum box, air will suddenly

flow out of, or into, these holes in the drum surface.

This action is similar to that in a siren and results in the high-pitch screen which is so characteristic of paper machines and which is usually referred to as "couch noise". The "couch drum" is, however, not the only one making this noise since any suction roll will behave in the same way.

Because of the large amount of air flowing and the length of the drum which is about 20 feet, the noise intensity is very high. Sound levels of 110 to 120 decibels are quite common (depending on the speed of the machine) in the areas near the machine commonly occupied by machine operators. Besides the extreme annoyance caused by such noise, communication is made very difficult; and what is even more important, damage is caused to the operator's hearing.

The present invention silences this noise by preventing the source of sound from radiating in its preferred direction, while at the same time allowing the sound-free access to the outside and rendering the source of sound inefficient.

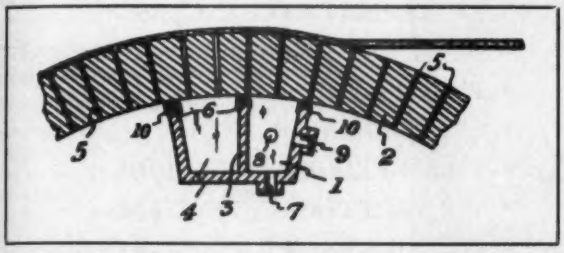


Fig. 2

As shown in Fig. 2, the silencer device of the invention comprises a chamber 1 extending substantially the length of the suction roll 2 and arranged next to the leaving edge 3 of the suction box 4.

The suction roll 2 has radial holes 5 arranged along the roll, the holes being spaced at desired intervals and extending across most of the surface of the roll 2. The suction box 4 as well as the chamber 1 are held as close as possible against the underside of the suction roll 2, sealing strips 6 being provided at the top of both the suction box 4 and the chamber 1 to ensure the co-operation with the suction roll 2.

The suction box 4 is provided with a wide opening from which suction is applied through the radial holes 5 to the paper or pulp travelling over the outer surface of the suction roll 2.

The chamber 1 is wide open at the top from which air is supplied to the radial holes 5 to replace the air evacuated from the suction box 4.

One or more openings 7 are provided at each end of the chamber 1 for supply of air into the radial holes 5. Three openings are shown at each end of the chamber 1, the opening 7 being provided in the bottom wall of the chamber, the opening 8 in the front wall of the chamber and the opening 9 in the leaving wall of the chamber 1.

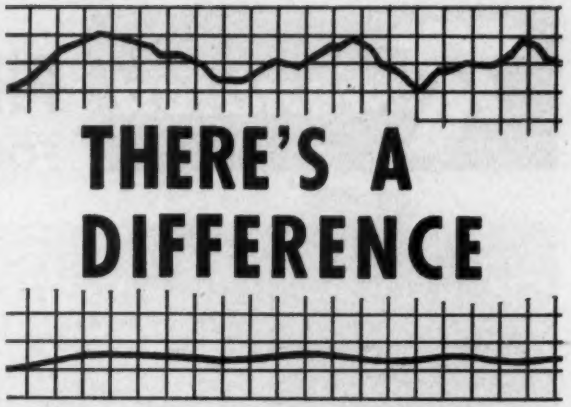
Production of fibre boards

U. S. 2,887,430, issued May 19, 1959, to Emil O. L. Wallen and assigned to Leje and Thurne Aktiebolag, describes a method of treating wood-fibre pulp in cellulose factories for the production of paper, pasteboard, fibre boards and similar fibre products. The invention particularly refers to that section of the production process wherein the disintegrated and strained fibre pulp is thickened by dewatering.

An apparatus with a rotating strainer drum is used onto which the fibre pulp is applied under such conditions that the pulp is caused to form on the envelope of the drum a fibre layer, which is effective as a filter and is also capable of filtering the suspension to such an extent that the escaping water need not be subjected to any purifying process.

This filter layer is preferably made up by the fibre-suspension proper which is to be dewatered—the latter being applied to a portion of the strainer drum lying free above the liquid surface, so that the fibres will be separated immediately to deposit on the jacket of the drum.

In this manner, a solid fibre layer is formed on the downward-running part of the drum and is maintained intact during its passage through the suspension surounding the drum and serves as a filter for the separation of the fibres from the suspension.



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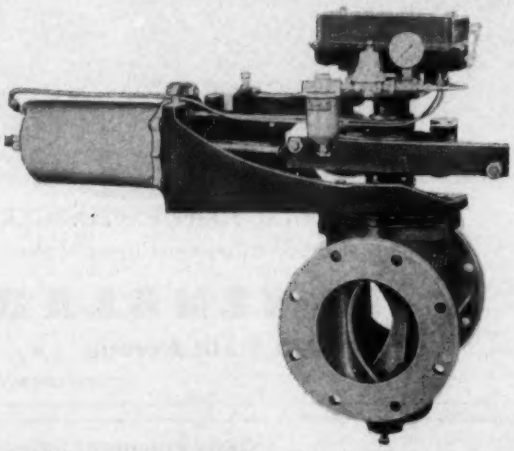

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REPRESENTATIVES IN PRINCIPAL CITIES

Other Patents of Interest to the Pulp and Paper Industry

Subject	Inventor or Assignee	Patent No.	Date
Debarker	Cloyd D. Waldron	2,876,812	3/10/59
Carton cases	Philipsen & Co.	2,876,944	"
Paper board cask	Container Corp. of America	2,876,945	"
Cooling and setting wax coatings on paper	Waxide Paper Co.	2,877,140	"
Wrapper carton	Mead-Atlanta Paper Co.	2,877,894	3/17/59
Carton with cushion-cover flap	Lloyd D. Van Antwerpen	2,877,942	"
Self-erecting box	Frank A. Gastright	2,877,943	"
Corner-packing devices	Henry J. Gariepy	2,878,982	3/24/59
Nesting paperboard boxes	William B. Dulaney	2,878,983	"
Article-packaging means	West Virginia Pulp & Paper Co.	2,878,984	"
Package for sliced bacon	Robert T. Rossum	2,878,985	"
Collapsible carton	Bloomer Bros. Co.	2,878,986-7	"
Coin mailer	Raymond Kryeske	2,878,988	"
Tape-roll holder	Waldorf Paper Products Co.	2,879,022	"
Paper machine drum arrangement	Beloit Iron Works	2,879,039	"
Production of heat-sealable filter paper for infusion packages	Adam Sorg and Edwin V. Hadley	2,879,172	"
Pulp-molding machine	Diamond Gardner Corp.	2,879,696-7	3/31/59
By-product and heat recovery from pulp residual liquor	Babcock & Wilcox Co.	2,879,838	"
Bottom closures for lined cartons	Bergstein Packaging Trust	2,879,933	"
Carton	Fort Wayne Corrugated Paper Co.	2,879,934	"
Resilient paper covers for containers	Maryland Cup Co.	2,879,935	"
Heat-sensitive copying paper	Minnesota Mining & Mfg. Co.	2,880,110	"
Partitioned packs	Aktiebolaget Ahlen & Akerlund Forpackning	2,880,921	4/7/59
Cartons	David Levkoff et. al.	2,880,922-3	"
Container	George A. Moore	2,880,924	"
Paperforming section	St Anne's Board Mill Co. Ltd.	2,881,668	4/14/59
Paper or board product	St. Anne's Board Mill Co. Ltd.	2,881,669	4/14/59
Dewatering stock in papermaking	St. Anne's Board Mill Co. Ltd.	2,881,670 & 2,881,673 & 2,881,675	" " "
Apparatus for the manufacture of paper or board product	St. Anne's Board Mill Co. Ltd.	2,881,671-2 & 2,881,676-8	" "
Pulp-molding machine	Diamond Gardner Corp.	2,881,679	"
Foldable carrier for bottles	Michigan Carton Co.	2,881,946	"
Re-closable dispensing carton	Diamond Gardner Corp.	2,881,967	"
Collapsible carton	Bloomer Bros. Co.	2,881,968	"
Inspection cover and bulge-top paper box	Container Corp. of America	2,881,969	"
Carton	American Can Co.	2,881,970	"
Letter-envelope unit	James V. De Tolve	2,881,971	"
Method of charging digesters	Curt F. Rosenblad	2,882,148	"
Manufacture of paper filters	C.A.V. Ltd.	2,882,801	4/21/59
Method of forming a pulp suspension into a sheet	Dominion Engineering Works Ltd.	2,882,966	"
Digester discharge valve	Pandia Inc.	2,882,967	"
Air-bleed press arrangement	Beloit Iron Works	2,882,968	"
Silencing means for papermachine suction rolls	International Paper Co.	2,882,969	"
Containers	Irving Richer	2,883,042	"
Waterproof carton for icing beverages	Pabst Brewing Co.	2,883,046	"
Multi-partitioned container	Chas. Pfizer & Co. Inc.	2,883,098	"
Coating paper with an aqueous dispersion of latex	Sherman Paper Products Corp.	2,883,303	"
Papermaker's wet felt	Draper Brothers Co.	2,883,734	4/28/59
Apparatus for making paper plant covers	Eleanor Paxton	2,883,915	"
Box setting-up machine	Tech-Art Inc.	2,883,914	"

NEW PRODUCTS

These items are numbered for your convenience. Further information on the various products described may be requested at no obligation through our Readers' Service Dept. Use the business reply card in this issue.

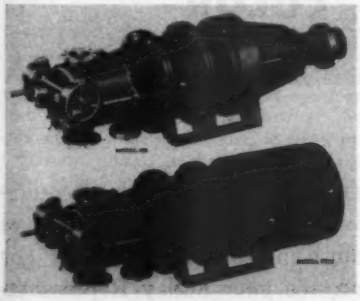
Water-resistant corrugating adhesive

A new, low-cost, water-resistant corrugating adhesive has been developed, in which calcium cyanamide and formaldehyde is mixed with starch and other ingredients. It is known as Keokor.

From the standpoint of board strength, production speed and ease of preparation, it is fully equal to the standard non-water resistant starch adhesives currently being used. The degree of water resistance obtained with Keokor is such that no voluntary separation of the plys occurs when the board is immersed in water at 75°F for 24 hours. Subsequently, when allowed to dry back to its former moisture content, the board regains its original stiffness and bond strength.

The company stresses that Keokor is not a suitable replacement for some of the higher cost water-resistant adhesives used to make board which must meet the maximum possible water-resistant requirements. *Hubinger Co.*

Circle No. 11 on Readers' Service Card



Stock-preparation systems

The new and improved Stock-Maker and Stuff-Maker jordans, with the new two-piece rotor and shell fillings, reduce the cost of filling replacement.

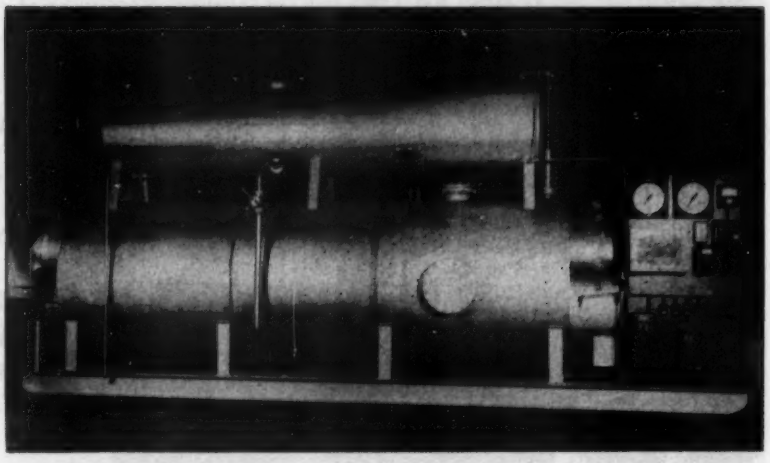
The new Stock-Maker keeps the same reverse flow, sealed-pressure beating treatment. By changing the filling, the Stock-Maker becomes a Stuff-Maker, with standard jordan flow for cutting treatment.

The option of having a direct-coupled or built-in motor (assembled from standard parts) enables the user to save space and makes installation easier.

The new stock-preparation systems are available in two sizes—No. 6 with a 150- to 200-hp. motor; and No. 8 with a 300- to 350-hp. motor.

The fillings may be changed in two hours or less and downtime is at a minimum, compared to most conical refiners. They are also precision-machined and eliminate the need for grinding-in. They may be used with the older or newer model stock-makers in the field. With improved metallurgical techniques, a larger variety of fillings may be selected for all types of treatment. *Morden Machines Co.*

Circle No. 12 on Readers' Service Card



Liquid heater

A new atmospheric-pressure liquid heater has been produced in conjunction with the expectation that low-pressure, high-temperature heating systems will replace high-pressure steam systems, currently used in many chemical and paper-making applications.

The heater is a tank-like, oil- or gas-fired furnace where commercially available oil is heated at atmospheric pressure to temperatures ranging from 350° to 650°F. maximum. The hot oil is then circulated by a low-pressure pumping systems to the processing equipment.

Besides lower cost, complicated auxiliary equipment is eliminated. Flash tanks, condensate-return systems and air ejectors are not required. Major savings may also be obtained by combining the new heater with existing processing equipment, such as rolls, coils, calendars, reactors, auto-claves, driers or kettles. *Allis-Chalmers Mfg. Co.*

Circle No. 13 on Readers' Service Card

Radiation thermometer

The new Thermodot radiation thermometer automatically and continuously measures the temperature of a remote object without physical contact. The operation is based on the fact that an object gives off thermal radiation as a function of its temperature.

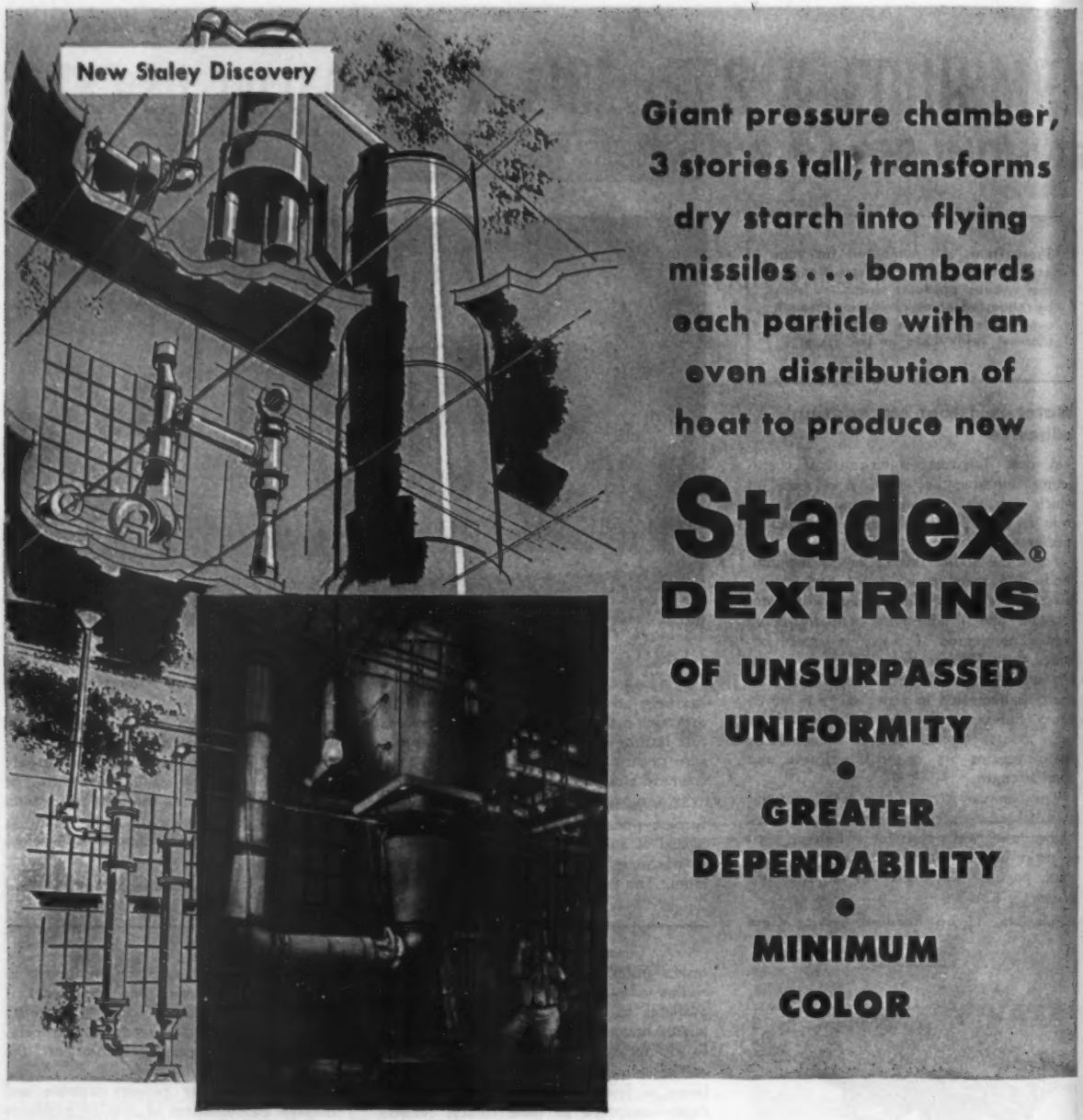
Thermodot uses an infrared transmitting lens to focus this radiation onto a sensitive infrared detector. The detector generates a signal voltage accurately proportional to the radiation intensity and the signal is amplified to a level sufficient to drive an indicator calibrated directly in temperature. The full-scale response of the thermometer is two seconds.

The thermometer permits accurate and reliable measurements at low temperatures —400° F. full scale, the lowest standard range. A calibrated radiation source is built into the thermometer to provide accurate and rapid standardization. *Radiation Electronics Co., Div. of Comptometer Corp.*

Circle No. 14 on Readers' Service Card

Core holder

A new, revolutionary-designed, virtually indestructible core holder is now offered. Tradenamed Center Loc, it reportedly does not damage cores, permit slipping or waste time and labor in changing the winding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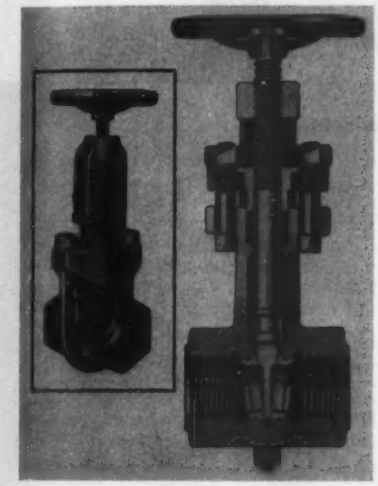
cores. It can produce superior winding packages, from start to finish, in practically any situation.

The most important element of the clamper is a self-expanding head, whereby, the paper or metal core is automatically or centrally clamped when the winding process begins. This low-cost core holder also provides adjustment for winding with straight edges. *Hobbs Mfg. Co.*

Circle No. 15 on Readers' Service Card



Metal gate valves

A new, improved line of "Causul" metal gate valves, designed especially for corrosive service in paper and caustic production, are designated as Fig. 1910. They are available in ½- to 8-in. sizes, with screwed or flanged ends, "King-Clip" bolted bonnet type, with either stainless steel or monel trim and are rated from 175 to 225 lb. w.o.g.

The principal change of the Fig. 1910 is the fullway design with full seat openings that maintain pressure and flow at the maximum for any specific size, ½ to ⅛ in.

"Causul" metal, the material from which valve bodies, bonnets and glands are made, is an austenitic iron, containing about 20-per cent nickel and substantial percentages of copper, chromium and molybdenum. *Lunkenheimer Co.*

Circle No. 16 on Readers' Service Card

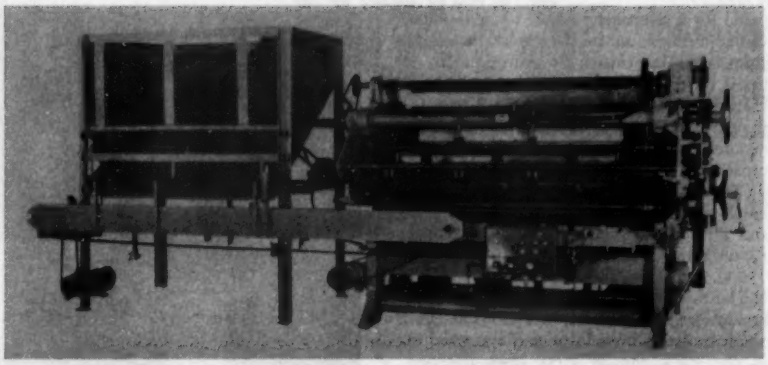
Clamp cutters

Three new heavy-duty, hydraulic clamp cutters, capable of 50 strokes per min., have been added to the Lawson Packmaker line. They are available in 46-, 52- and 55-in. sizes.

In addition to their high knifing speed, they are reported to be almost 20 per cent faster than any other comparable machines. These cutters are the first in their size range to incorporate all of the modern design advantages of the 60-, 66- and 69-in. Lawson Pacemakers.

Their new features include: a rear-table, slot-closing device to facilitate rear loading or "swinging" the lift; a true two-end knife pull using a unique double-crank design; a three-point knife bar support to prevent bowed or concave cuts; and newly engineered double-overload and non-repeat safeties. *Lawson Co., Div. of Miehle-Goss-Dexter Inc.*

Circle No. 17 on Readers' Service Card



Automatic core loader

A new high-speed, automatic core loader, Model 2765, gets higher speeds of up to 15 long cores per minute from its new system of positive feeding and positioning of cores by using a simple conveyor and pushing action with no reciprocating mass. It is designed to coordinate simply with an automatic rewinder in a production layout.

The new model has an exclusive roller system to guide the mandrel into the incoming core. Cull discharge and storage has been incorporated in the new core loader. The automatic core loader also has log-storage facilities or slit-roll discharge. *Paper Converting Machine Co.*

Circle No. 19 on Readers' Service Card

Horizontal smoothing and breaker press

The development of an economical horizontal smoothing and breaker press is claimed to represent a new approach in smoothing-press design.

The new press can be installed in paper-machine dryer sections at approximately the same location as the horizontal size press.

The horizontal smoothing press can be converted to a horizontal size press by simply changing from two hard rolls to one hard and one rubber-covered roll—the horizontal size press can be changed to a smoothing press by simply substituting a chilled iron (usually water-cooled) roll, commonly used in smoothing presses on paper machines. *Patton Mfg. Co.*

Circle No. 18 on Readers' Service Card

Spray nozzle

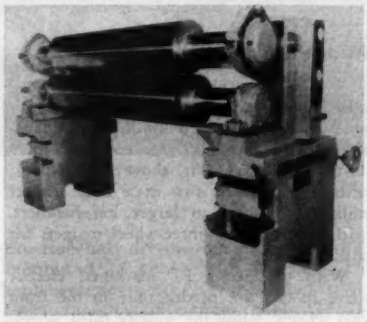
The new Quick-Clamp spray nozzle with a scientifically designed, long-life orifice can be used wherever a pressure spray is needed.

It is made of hard-cast manganese bronze to resist abrasive wear. A machined taper is on the outside diameter of the nozzle in order to fit snugly into the hole which has been drilled and taper-reamed in the pipe.

The nozzle has a higher hydraulic efficiency than a plain hole in a header pipe. It is not necessary to replace the entire header when corrosion or wear has opened up the orifice. A bronze U-clamp and cam firmly lock the nozzle into place.

Quick-Clamp spray nozzles will fit pipe diameters of 2, 2½ and 3 in. *Link-Belt Co.*

Circle No. 20 on Readers' Service Card



Press section

A new heavy-duty press section has been built for use in paper-saturating and impregnating-machine lines.

The press section features open-frame construction for quick and easy roll removal, heavy-duty bearings, mechanical means for controlling accurate nip settings and chrome-plated rolls. Doctors for cleaning rolls can be provided. *Dilts Div., Black-Clawson Co.*

Circle No. 21 on Readers' Service Card

Selectifier screens

The addition of a small-size and intermediate-size Selectifier screen to the company's existing line of Selectifier screens for pulp and paper application has been announced.

The new small-capacity unit, called 12-P, is specifically designed to answer the de-

mand for a selectifier suitable for individual vat application on small-cylinder bore machines and low-capacity fourdriniers. It is based on the same disign and performance characteristics as the original 24-P Selectifier screen. The 12-P is a low-power, low-maintenance screen with a maximum capacity of 1200 gpm.

The new intermediate 30-P model (7500 gpm.) was developed to round out the line and fill the gap between the 24-P model (3800 gpm.) and high-capacity 36-P model (9000 gpm.).

The totally enclosed pressureized screens, besides removing pins, shives and unwanted material, defloculate fiber bundles in the stock and in most cases improve formation. The Selectifiers have reportedly been successfully used on nearly every grade of paper and board. *Shartle Div., Black-Clawson Co.*

Circle No. 22 on Readers' Service Card

Midget log handlers

With the development of the new three-wheeled log handlers, smaller mills will be able to modernize their log handling operations. Now they will be able to lift logs in 17-ton bunches (16 ft. above the ground), instead of one or two at a time. Larger mills, accustomed to larger log handlers, will use these new three-wheel midgets for utility work.

With the Series FT machines, electric drive motors are needed only in the front two wheels, while the smaller third wheels are used solely for steering and stability. According to the company, they can be produced for about 33 per cent less. *R. G. Le Tourneau Inc.*

Circle No. 23 on Readers' Service Card

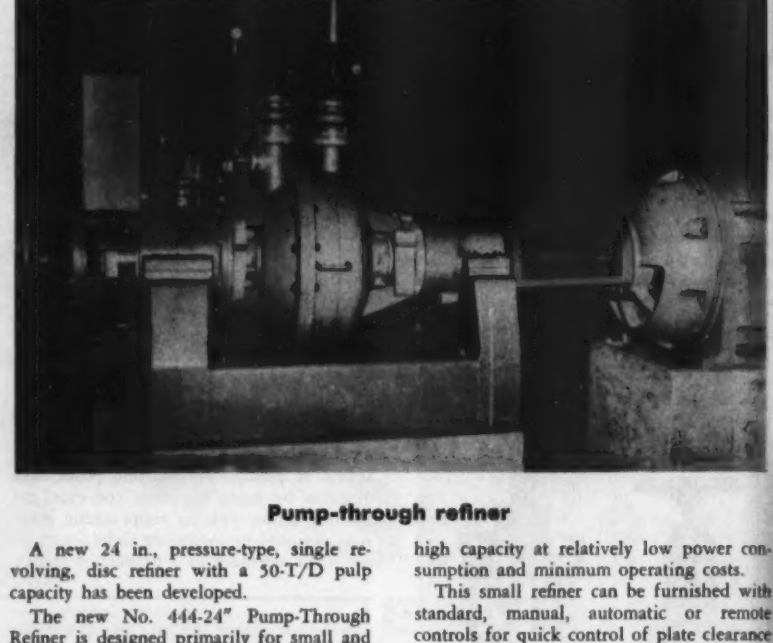
Free-piston pump

A new and different free-piston pump, with only nine moving parts, will pump anything that flows, including slurry, flows, including slurry, sludge, plastics, sludge, plastics, acids and semi-solids.
stainless steel, non-contaminating chambers.

Requiring no relief or safety valves, the pump stops when a stoppage occurs. It can be safely or efficiently operated, submerged or under any other condition. There are no motors or shafts, packings, seals, oils or greases.

Pump-operation is automatically controlled by a separate control box. The free-piston pump can operate indefinitely without being shut down. It is available in any desired size. *Crossley Machine Co.*

Circle No. 24 on Readers Service Card



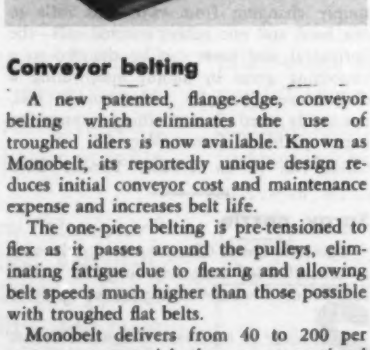
Pump-through refiner

A new 24 in., pressure-type, single revolving, disc refiner with a 50-T/D pulp capacity has been developed.

The new No. 444-24" Pump-Through Refiner is designed primarily for small and medium sized mills. The unit provides pulp of excellent quality and can be used for a wide range of stock preparations and special fiberizing applications. It offers a high capacity at relatively low power consumption and minimum operating costs.

This small refiner can be furnished with standard, manual, automatic or remote controls for quick control of plate clearance to compensate for the type of stock desired and to assure maximum uniformity in refining. *Bauer Bros. Co.*

Circle No. 25 on Readers' Service Card



Conveyor belting

A new patented, flange-edge, conveyor belting which eliminates the use of troughed idlers is now available. Known as Monobelt, its reportedly unique design reduces initial conveyor cost and maintenance expense and increases belt life.

The one-piece belting is pre-tensioned to flex as it passes around the pulleys, eliminating fatigue due to flexing and allowing belt speeds much higher than those possible with troughed flat belts.

Monobelt delivers from 40 to 200 per cent more material than a conventional troughed belt of the same width, traveling at the same speed. It is available in widths up to 48 in. and comes in every grade, type and class of belting previously used in industry. Special-purpose belting is available in 8- to 48-in. widths. Flange sizes range from 1 to 3 in. *MonoBelting Corp.*

Circle No. 26 on Readers' Service Card

Geon-made ball valves

Ball valves made from a new, rigid vinyl material, called Geon, have successfully been used by Jamesbury Corp. in piping systems where corrosion has always been a problem.

The Geon-made ball valves offer superior resistance to oils, acids, alkalies and most chemicals. No lubrication is needed. They are effective at either full pressure or vacuum.

Available with threaded ends, weld ends or flanges, the vinyl valves are self compensating for temperature or pressure changes. Since Geon weighs less than metal, shipping weights are lower and installation is easier. *B. F. Goodrich, Chemical Co., Div. of B. F. Goodrich Co.*

Circle No. 27 on Readers' Service Card

Paper knife

A new, high-alloy paper knife, known as the BOLTOLOY knife, is finely ground and high finished to extremely close tolerances. These knives are bolted to solid oak shields. *John W. Bolton & Sons Inc.*

Circle No. 28 on Readers' Service Card

Foam-solvent cleaning method

A new method for making chemical lather or foam, for cleaning industrial

...Fluid Power news

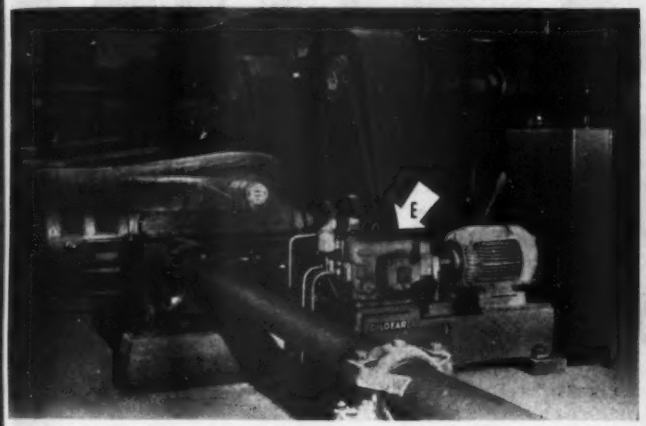
REPORT No. 12,104 OILGEAR SOLVES SPEED CONTROL PROBLEM

From Oilgear Application-Engineering Files

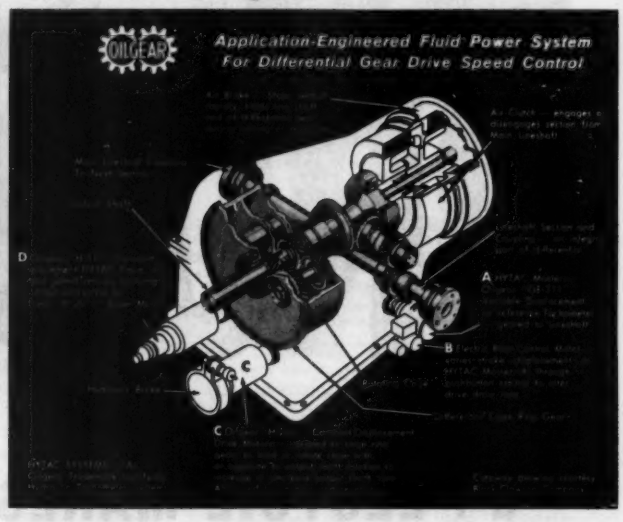
HOW HYTAC SYSTEMS CONTROL DIFFERENTIAL DRIVE SPEEDS ON NEW 190" PAPER MACHINE

USER: *Sonoco Products Company, Hartsville, South Carolina*
BUILDER: *The Black-Clawson Company, Inc., Paper Machine Division, Watertown, New York*

DATA: To design and build a differential-type drive, Black-Clawson engineers outlined the following over-all requirements: 1. To be rugged, simple, and have easily replaceable parts. 2. Speed variation device to control sizes from 150 to 1200 hp, and be capable of performing additional functions — inching, reversing, and slack take-up. 3. Device must maintain synchronous speed regardless of load or temperature changes. 4. Complete drive must be compact, clean design • After solution of gear mechanism problems, the following additional requirements were outlined for the speed variation system: 1. Simple, remote, section control panels, with all controls interlocked. 2. Draw range of at least ±4½%, precisely variable. 3. Must be capable of 24-hour continuous drive service with an absolute minimum of maintenance. 4. Would prefer one source, one responsibility for entire control system. (Mechanical, electrical, and hydraulic systems were investigated.)



A portion of Sonoco Products Company's new "Mr. Mac" — 190" (170" trim) Black-Clawson paper machine designed to produce 9-pt., semi-chemical corrugating board at speeds up to 1500 fpm. "Mr. Mac" is the first paper machine to be fully equipped with differential gear drives on which speed is hydraulically controlled and operated. Three of these new Oilgear Fluid Power Controlled, Black-Clawson differentials are shown above with one of the accompanying Oilgear "Power-Paks" clearly visible. These drives are used on the couch roll, first press, second press, first dryer section, breaker stack, second dryer section, calendar stack, and "autoflyte" reel . . . a total of 8 drives—5 rated at 150 hp, 3 rated at 300 hp.



SOLUTION: Application-Engineered *HYTAC SYSTEMS* arranged through teamwork between Oilgear and Black-Clawson engineers throughout the stages of design, testing, application, and actual installation.

Black-Clawson states — *"operating characteristics highly important to any papermaking machine are obtained through a unique hydraulic motor differential cage drive and a HYTAC SYSTEM (hydraulic tachometer feedback control arrangement). Significant features of this HYTAC drive are: 1. Machine sections can be inched or reversed with line shaft running or down. 2. No helper motors needed — no belts or chain drives involved. 3. Accurate speed regulation. 4. Precision draw control for all applications — 9% draw range. 5. HYTAC SYSTEM maintains speed regardless of load or temperature changes. 6. Hydraulic mechanism and control panels can be located remotely from drives. 7. Compleie drive control interlocked. 8. Load on machine sections indicated by pressure gages on drive. 9. Compact, durable construction. 10. Absolute minimum of maintenance required."* The reasoning that led to selection of HYTAC SYSTEMS has also been clearly stated by Black-Clawson engineers, as follows: *"Mechanical drives had many serious drawbacks, such as horsepower limitations and the inability to perform the desired functions. Choice between electric or hydraulic drive proved more difficult . . . necessity that electronic controls circuits would be required to maintain accuracy, and the larger size of the driving units were the deciding factors in favor of the hydraulic drive. To determine size, an analysis was made . . . here again hydraulic drive proved its superiority, since the drive motor could be driven in both directions. Tests proved that the drive was even more accurate than our original expectations . . . regulation between zero and rated load was only ±0.005%. Under conditions of constant load and speed, a variation of ±0.002% could also occur . . . when added together, maximum regulation is ±0.007%."*

HOW IT WORKS: Fluid from lineshaft-driven master tach (A) gives differential drive speed command to control on Oilgear "DRX-2011" two-way, variable displacement pump (E), indicated in photo, left, of Oilgear "Power-Pak" installation. Slave tach (D) feeds back a flow signal proportional to actual differential drive speed. When main lineshaft speed increases or decreases, fluid flow from Master Tach (A) automatically increases or decreases correspondingly to command differential drive to follow lineshaft speed change. Through local or remote pushbutton stations connected to electric pilot motor (B) on Master Tach (A), operator can increase or decrease speed of each section infinitely up to 9% of prevailing lineshaft speed. When differential cage is rotated with, or in same direction as the output shaft by motors (C), output shaft speed is increased. If cage is rotated in the opposite direction by motors (C), output shaft speed is decreased. All factors, such as change in load or temperature, are automatically compensated by these HYTAC SYSTEMS to maintain exact, set degree of section synchronization with lineshaft at all times.

Accurate synchronization of multiple, tandem operations; combining separate operations to handle webs or sheets — soft, fragile at one point — strong at another; or continuous webs when tension affects quality . . . all need more than conventional drives and controls . . . they need the precision of HYTAC SYSTEMS, or other Oilgear "Any-Speed" drives and controls!

For practical solutions to YOUR linear or rotary Controlled-Motion problems, call the factory-trained Oilgear Application-Engineer in your vicinity. Or write, stating your specific requirements, directly to . . .

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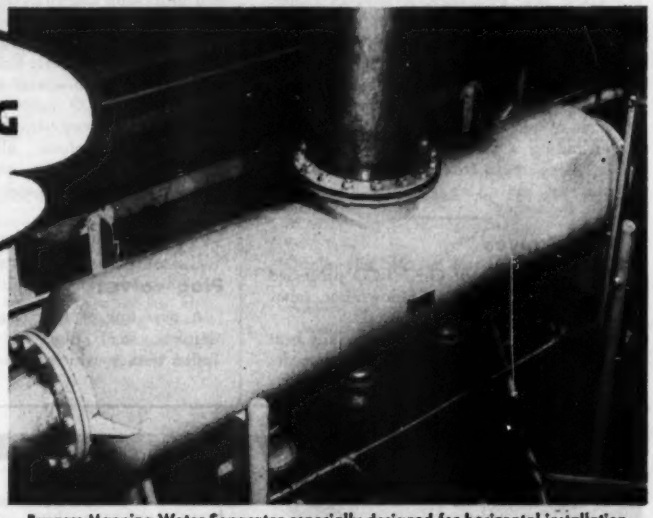
SEE HOW BURGESS-MANNING handles it for Crown Zellerbach!



Burgess-Manning Water Separator especially designed for horizontal installation and use with Mold-Yankee machine at Crown Zellerbach California plant.

The separation of entrained water from a stream of air or gas is a familiar problem to Burgess-Manning engineers. They have been called upon to perform this task many times since the first Burgess-Manning Water Separator Snubber was introduced.

The Water Separator installed in the Crown Zellerbach plant at Antioch, California by the Beloit Iron Works is typical. Because of the unusual requirements of this installation a special water separator was designed and built.

A horizontal installation, between the Mold-Yankee paper machine and a centrifugal exhauster, was required, with a 14" inlet at each end and a center 18" outlet. The capacity is 6500 CFM, and entrained water from the water seal is entirely removed.

In many Burgess-Manning Water Separation installations, unlike this one, exhaust silencing is also an important function.

If water separation or exhaust silencing is a problem, consult Burgess-Manning!

Sound Engineering

BURGESS-MANNING COMPANY

Industrial Silencer Division

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Libertyville, Illinois

New Products . . .

equipment, pipe assemblies, towers, tanks, etc., has been developed.

The foam solvent, made from a "unique" apparatus, is pumped directly into the tank, pipe, tower, etc. to be cleaned. When the vessel is filled with this solvent, the process continues with the foam passing into a foam breaker and a filter, which removes the material dislodged by movement of the foam through the equipment. The solvent is then re-cycled through the foam generator and the unit being cleaned.

With the development of the foam-solvent cleaning method, it is now possible to clean a large volume system with a small amount of liquid because the ratio of foam to solvent will average 20 to 1. *Dowell Div. of Dow Chemical Co.*

Circle No. 29 on Readers' Service Card

Paddle-type lime slaker

A new, Omega Pug Mill (paddle-type) lime slaker is announced. It requires less floor space, uses less water, requires shorter process time and can be operated over a wider range than the retention-type lime slakers.

The single-shaft pug mill has a row of stationary blades that mesh with the rotating blades to insure proper mixing action and prevent the rolling or balling up of the pasty mass of slaking lime. Hardened spring-steel plows at the paddle tips are easily and inexpensively replaced or reversed when they wear.

The all-steel slaker of welded construction features progressive slaking without the possibility of short circuits, automatic water ratioing, continuous grit removal and efficient slaking at controlled temperatures without using a hot-water supply. *B-I-F Industries, Inc.*

Circle No. 30 on Readers' Service Card

Dumper

A new dumper that lifts and dumps complete inplant trucks has been introduced. The unit is designed for rapid, low-cost batch loading of mixing, grinding and pulverizing machinery or kettles, tanks, vats and other process equipment. It permits the truck to be filled and weighed remote from the receiving vessel.

The dumper, available in capacities up to 3000 lbs. and dumping heights to 50 ft., is furnished in portable and stationary models. Although of standardized design, it can be varied to accommodate almost any size truck and variety of containers. *Conveyors & Dumpers Inc.*

Circle No. 31 on Readers' Service Card

Gear-drive saw

A new line of seven chain saws, including a gear-drive model has been announced. The new gear-drive saw, known as McCulloch ONE/60, is designed principally for pulp cutting and other woodcutting jobs where extra lugging power is needed from a medium-sized engine. It comes equipped with either a regular cutter bar or plunge bow. *McCulloch Corp.*

Circle No. 32 on Readers' Service Card

Pneumatic computer system

A new pneumatically controlled, Honeywell 800 computer system has been developed. According to the company, firm "fingers" of air pressures and vacuums have replaced mechanical brakes and clutches, traditionally used to guide the movement of data-bearing tape through

the reading-writing mechanisms of computers, on the new transistorized computer.

These new pneumatic techniques reduce tape wear and slippage by distributing breaking and clutching forces over areas ten times as great as those subjected to mechanical pinching, and add blowing and sucking actions to tape surfaces at the instant of releasing or applying force, thus contributing a cleansing factor. *Datamatic Div. Minneapolis-Honeywell Regulator Co.*

Circle No. 33 on Readers' Service Card

Super knives

The availability of O-KNI-CO processed super knives, for lowering downtime, labor and spoilage costs, is announced.

The use of high alloy steel, specially heat treated for uniform hardness, reportedly results in an extra keen edge with unequalled resistance to both ordinary wear and to nicking and chipping. New precision mirror-face grinding eliminates saw tooth edges. The straight sharp edge produced delivers clean, accurate trims and permits closer tolerance in a wide variety of bevels.

The O-KNI-CO super knives reportedly can cut any material—paper, aluminum foil, film, cellophane, glued board, etc. Each knife is carefully inspected for hardness, gauge accuracy and taper clearance. *Ohio Knife Co.*

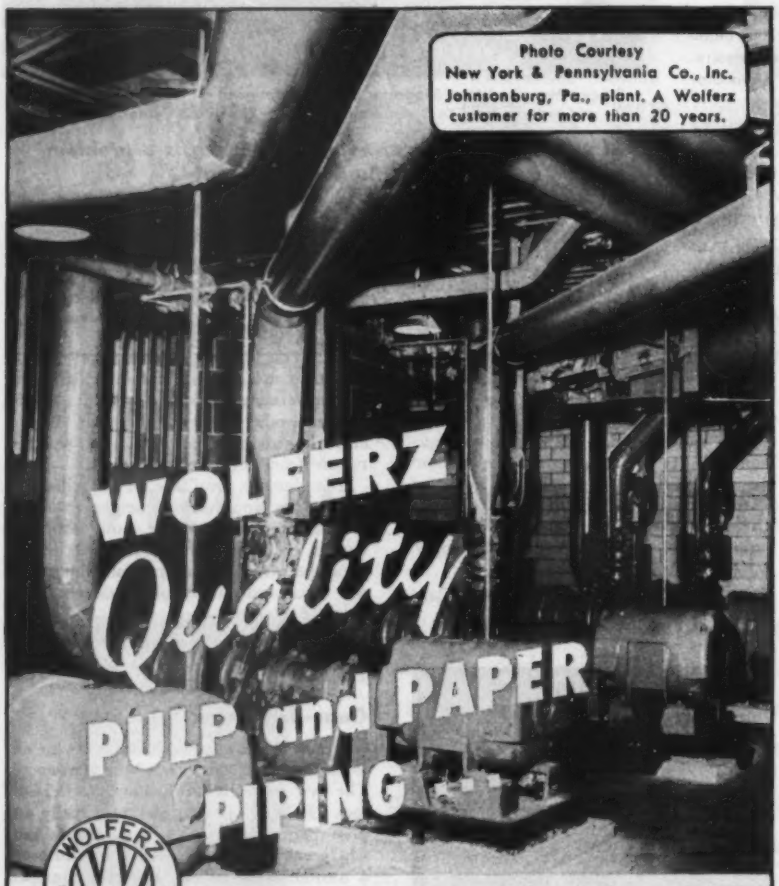
Circle No. 34 on Readers' Service Card

Plug valves

A new line of four- and 5-port Tufline stainless steel plug valves incorporates Teflon sleeves, which require no lubrication. The plug valves give assured operation without seizing in any position. They are available in the 150-lb. class from ½- to 2-in. sizes, with both flanged and screwed ends.

The valves can handle a wide range of media from hard-to-hold light gases and solvents to heavy slurries and corrosive liquids. They provide trouble-free service over the temperature range of −150° F to 400° F. and pressures from high vacuum to 275 psi. (depending on temperature). *Continental Mfg. Co.*

Circle No. 35 on Readers' Service Card



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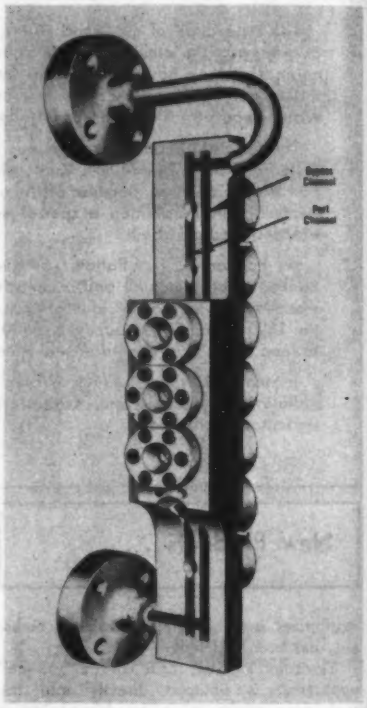

Boiler-water gage

A new, patented, high-pressure, boiler-water gage has been introduced, known as the Diamond MP-3000 Multi-Port Bi-Color Gage. In this model, the condensate flows down through a bypass channel (shown in photo) instead of through the observation (port) channel. The absence of condensate in the observation channel assures a distinct bi-color image—signal red for steam and signal green for water, to improve readability.

The new gage is suitable for pressures up to and including 3000 psig. It is made in two standard vision lengths of 15 in. vision having seven ports and 21 in. vision with nine ports. Multiple vision gages may be had by tieing together either seven- or nine-port sections. *Diamond Power Specialty Corp.*

Circle No. 36 on Readers' Service Card

Laboratory refiner

A new 12-in. laboratory refiner, suitable for use over a wide range of horsepower ratings, is now on the market. The re-

finer is a precision-built machine incorporating many features of the larger single disc refiners and providing a refining action, which simulates with one or more passes, the uniform end products obtained from production machines.

Of rugged, dust-tight, and water-tight construction, the refiner is suitable for pulping processes and strength-development studies on raw, steamed or semi-chemically cooked chips; fully cooked pulp; cooked straw, wastepaper, Asplund fiber, etc. It operates with equal efficiency on dry or fluid feed, hot or cold, high or low consistency. *Sprout, Waldron & Co. Inc.*

Circle No. 37 on Readers' Service Card

Speed reducers

A new 25-to-1, double reduction series of shaft-mounted speed reducers is tradenamed Torque Arm, and comes in eight sizes.

The company improved the design of the new double reduction reducers without changing their overall dimensions or horsepower ratings. Output speeds range from 12 to 400 rpm.

The new 25-to-1 units will give 40 per cent lower output speeds with identical motor speeds and V-drive ratios as the 15-to-1 reducers. When output speeds are the same, lower ratio V-drives may be used with the 25-to-1 reducers at reduced cost. *Dodge Mfg. Corp.*

Circle No. 38 on Readers' Service Card

Electric motors

A new line of drip-proof electric motors in NEW NEMA rerated frame sizes, from ½ hp. at 900 rpm. through 150 hp. at 3600 rpm.—frames 182 through 445 urs., is announced.

The newly designed frames are rigid, seasoned, cast iron with integrally cast feet. The die-cast aluminum rotors are equipped with dual cooling fans and the entire rotor assembly is dynamically balanced. Pre-lubricated sealed ball bearings require no cleaning; the correct quantity of lubricant is sealed in and dirt and moisture are sealed out. Stator windings are impregnated with moisture-resisting, thermosetting insulating varnish. *Lima Electric Motor Co. Inc.*

Circle No. 39 on Readers' Service Card

Strip-roller coater

A new strip-roller coater, for the carton, paper and wood industries, has been developed. Called the Union Strip Coater, it permits adhesive application, in given strips and patterns, to many different materials.

The coating assembly consists of three rolls—doctor roll, transfer roll and strip roll. Thick or thin coatings can be applied by a simple adjustment of the openings between the doctor and transfer rolls. Further control of adhesive thickness can be obtained by running the strip rolls in and out toward the transfer rolls. The Union strip coater is available with rolls from 12 to 108 in. in length. *Union Tool Corp.*

Circle No. 40 on Readers' Service Card

NEW LITERATURE

Manufacturers' Publications

These items are numbered for your convenience. Copies of the publications may be requested at no obligation through our Readers' Service Dept. Use the handy business reply card which accompanies this issue.

Animal bone glue

Darling & Co. is offering new literature on its new animal bone glue, used as an adhesive for paper coating. The brochure, An Invitation to Paper Coaters, mentions various advantages in using the new coating glue, as well as services given by the company. The bulletin summarizes the work done by the company in evaluating the animal bone glue as a paper-coating additive. For more information, turn to the ad on inside back cover.

Circle No. 41 on Readers' Service Card

Employee-incentive plans

Eddy-Rucker-Nickels Co. has recently published the speech given by Daniel R. Pohlman (vice president of operations of Pohlman Foundry Co. Inc.) before a business management seminar, sponsored by the Buffalo, N. Y., Chamber of Commerce and the University of Buffalo, March 31, 1959. In his speech, he has compared various types of employee-incentive plans and listed the advantages and disadvantages of each.

Circle No. 42 on Readers' Service Card

Swing joints

OPW-Jordan Corp., through two new bulletins gives detailed engineering information, illustrations, specifications, chemical recommendations and prices on its five lines of ball bearing swing joints—bronze, steel, aluminum, monel and stainless steel.

Circle No. 43 on Readers' Service Card

Materials handling equipment

Louden Machinery Co. in a recently published 52-page, highly illustrated booklet, entitled Cost-Cutting with Monorail and Cranes, shows how the firm's materials handling equipment is used in a large number of industries. A four-page section is included to show how the firm's equipment is used in the paper industry. The introductory section discusses the different types of systems, as well as track, track accessories, trolleys, hoists, controls and special carriers. For more information see page 497.

Circle No. 44 on Readers' Service Card

Propeller and mixed-flow pumps

Layne & Bowler Inc.'s new bulletin contains detailed information on its line of propeller and mixed-flow pumps. It includes cut-away drawings, installation sketches and measurements, delivery and performance tables and complete information on all uses and application of these pumps.

Circle No. 45 on Readers' Service Card

Blade coater

Dilts Div., Black-Clawson Co. Inc., through a new bulletin, shows the latest developments in blade coating. Featured, is the company's new high-solids blade coater, tradenamed FLEXI-BLADE, which is used on paper and board machines.

Circle No. 46 on Readers' Service Card

Water-tight masonry

Master Builders Co. announces the availability of its new bulletin which discusses water-tight masonry. The bulletin outlines major considerations in designing tight masonry walls. Described is the role played by Omicron mortar proofing in providing a cohesive-plastic mortar to aid good workmanship and its positive-water reduction to minimize shrinkage and cracking. Also discussed are mortar ingredients and proportioning, compatability of brick and mortar, control of shrinkage and bleeding, separation cracks, mechanical-disturbance effects and the importance of proper protection.

Circle No. 47 on Readers' Service Card

Steam traps

Ross Midwest Fulton has published a new bulletin on its Ross-Miami steam traps. The new four-page bulletin discusses typical applications, capacities and construction of the traps for use in paper mills, chemical plants and all processes using steam. Diagrams show the construction of the steam trap, parts, and the type-S integral by-pass which is an exclusive feature of the Ross-Miami steam trap allowing all non-condensible gases to continuously vent from inlet to outlet.

Circle No. 48 on Readers' Service Card

Water treatment plant control

Bailey Meter Co. has published a new performance report on the control of the treatment plant for boiler feed water at a western New York utility. Problems faced by the utility and its method for solving them are carefully discussed.

Circle No. 49 on Readers' Service Card

Vibrating screens

Link-Belt Co. has issued a new 48-page book discussing its 12 different types of vibrating screens in 212 sizes. The book describes and illustrates each of the screens and foundry shake-outs as they are used to meet the needs of practically every industry. The book also contains information on accessory items—screen-cloth recommendations, data on bouncing-ball decks, snubbing and plugging controls, repulping decks and electrically heated screen cloths.

Circle No. 50 on Readers' Service Card

Weigh feeder machines

Syntron Co. announces the publication of a new catalog section on its electronically controlled, weigh feeder machines. They are designed for highly accurate feeding of dry chemicals and other bulk materials in water, chemical and other industrial processing operations. Four illustrated pages give complete descriptions, data and specifications for the feeder machine, its components and accessories. Data on Syntron gravimetric feeders are also presented in this catalog section.

Circle No. 51 on Readers' Service Card

Electronic air cleaner

American Air Filter Co. Inc. has published an all-new 16-page bulletin which describes the company's new Model-B Rollotron electronic air cleaner. The bulletin includes: operation and the electronic principle; an explanation of the agglomerator and storage sec-

tions; equipment drawings; capacity and dimension tables; specifications; a list of typical installations; and a graphic description of the horizontal version of the Rollotron (known as Type-H). The new bulletin also tells how the Rollotron has virtually eliminated maintenance.

Circle No. 52 on Readers' Service Card

Refiner plate design

Sprout, Waldron & Co. Inc. is offering a detailed review of refiner plate design. The bulletin explains primary factors in plate design for refining groundwood and sulfite tailings, semi-chemical pulps, cold-caustic pulp, high-yield kraft, kraft rejects, wastepaper and bagasse. The bulletin includes close-up photos of rotor and starter plates.

Circle No. 53 on Readers' Service Card

Motors and drives

Louis Allis Co. announces the recent publication of an eight-page bulletin that describes the company's complete line of motors and drives for the machine tool, chemical, paper and paper converting, materials handling, air conditioning and metal industries. It summarizes the characteristics and modifications for 20 basic types of motors and drives ranging from ¼ to 2000 h.p.

Circle No. 54 on Readers' Service Card

Nuclear liquid level gauges

Ohmart Corp. is offering a new bulletin which outlines various uses for Ohmart gamma-radiation level gauges in the pulp and paper industry. It gives details of an installation on a chlorine dioxide retention tower.

Circle No. 55 on Readers' Service Card

Uses for higher alcohol

Union Carbide Chemical Co., a division of Union Carbide Corp., has issued a new four-page bulletin which describes a number of uses for 2,6,8-trimethyl-4 nonanol. Typical reactions, properties, specifications, shipping data and data on constant boiling point mixtures are given in detail.

Circle No. 56 on Readers' Service Card

Technical data card

Tubular Products Div., Babcock & Wilcox Co., announces the availability of a new technical data card. It contains dimensions and weights per foot of pipe in ⅛- to 36-in. sizes for all schedules.

Circle No. 57 on Readers' Service Card

Effluent and water treatment tanks

Stebbins Engineering & Mfg. Co. announces a new four-page folder that describes its effluent and water treatment tanks, which are corrosion-resistant, steel-reinforced concrete structures.

Circle No. 58 on Readers' Service Card

Paper stock friction-loss

Allis-Chalmers Mfg. Co. and TAPPI have jointly released a new 10-minute, color, sound film titled, The Friction Loss of Paper Stock in Pipes. This film is a story behind the study conducted at the University of Maine under TAPPI supervision, which began in 1949.

Circle No. 59 on Readers' Service Card

Caprolactam monomer

National Aniline Div. of Allied Chemical Corp. has released a revised and enlarged bulletin on Caprolactam monomer which is used in the preparation of Nylon 6 for plastics, foils, coatings, treated papers, adhesives, printing pastes and dyes, lubricants, solvents and organic synthetics. The physical and chemical properties of this versatile material are presented and chemical reaction routes to commercial possibilities are explained and schematically diagramed.

Circle No. 60 on Readers' Service Card

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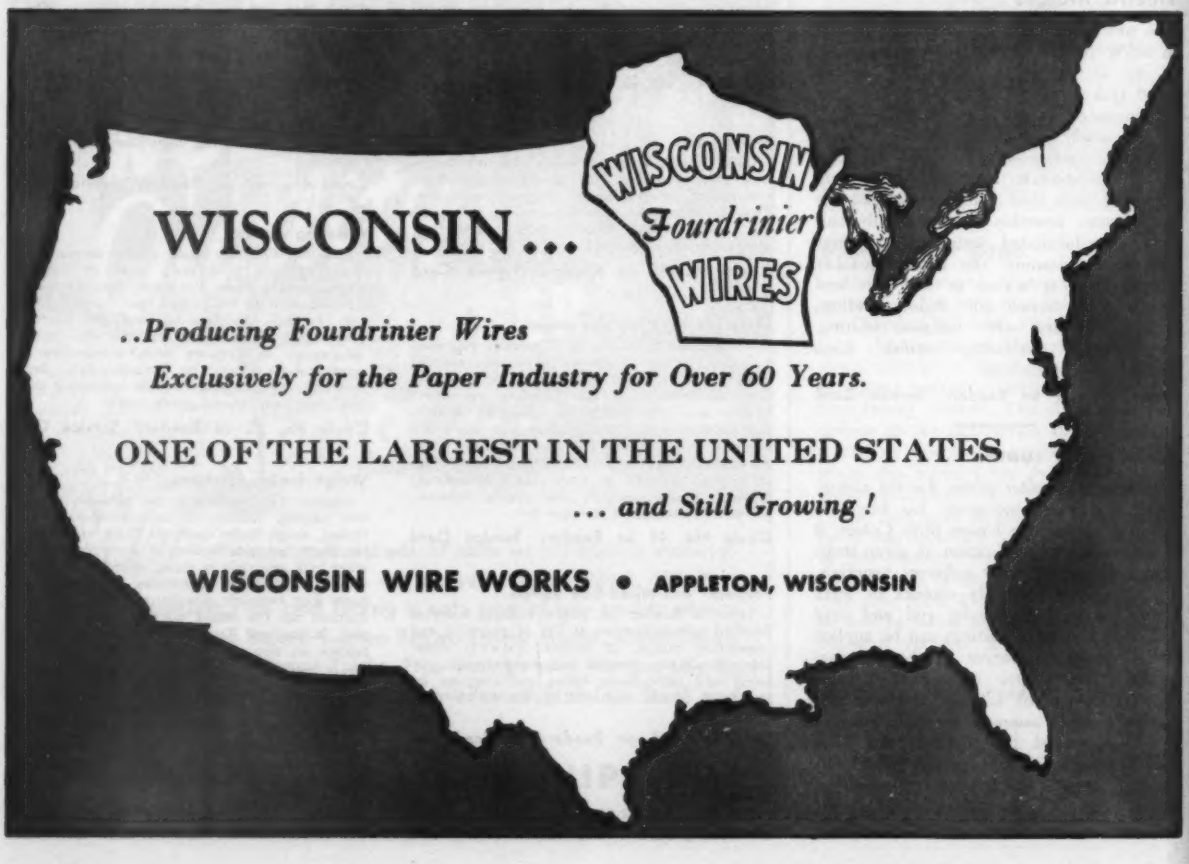

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We have an opening in our pulp manufacturing department for an experienced chemist, chemical engineer or pulp and paper technologist, pulp and paper manufacturing experience desirable. This is a position of responsibility with room for advancement. Starting salary based on experience and qualifications. All applications will be held in strict confidence. Please submit summary of educational background, experience, and salary requirements to:

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THE CHAMPION PAPER AND FIBRE COMPANY
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MALE HELP WANTED — QUALITY CONTROL SUPERVISOR

Experienced man needed to supervise Quality Control Laboratory of an Eastern New York State Paperboard Mill. Knowledge of color matching is a prerequisite.

Please send resume of experience and qualifications to Columbia Box Board Mills, Inc., Chatham, New York.

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These typical Fine Paper inside positions involve sales support, mill contact and office detail.
Very good starting salary and the usual employee benefits.
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Large manufacturing plant requires engineers capable and willing to do board work. Experience on machine design and layouts for hard board industry or pulp and paper industry desirable, but not necessary. Only first class men need apply. Give complete information with first letter. Excellent opportunity. Location south. Our employees know of this advertisement. Reply to Box 689, The Paper Industry.

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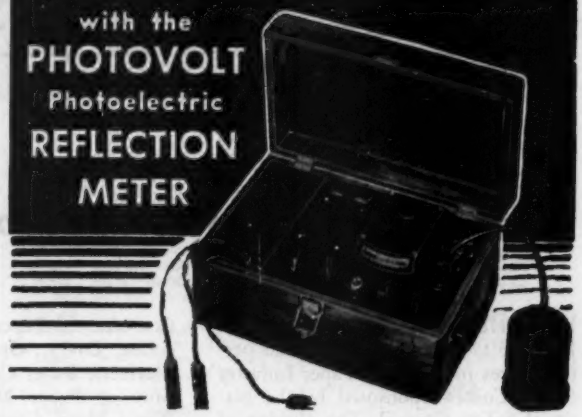

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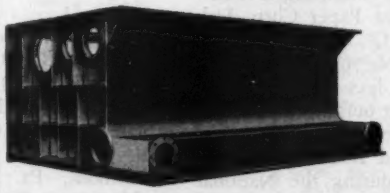

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CUSTOM FABRICATED and DESIGNED

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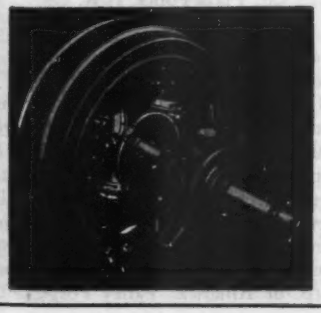
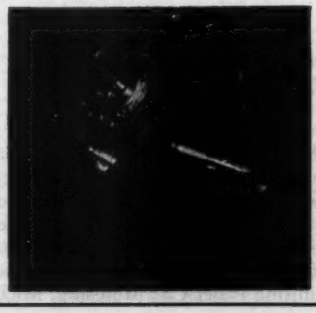


Use HORTON Clutches and Brakes to control the sheet tension on your center winders and back stands. Take the guess work out of tensioning and let Horton equipment give you uniform good rolls all the time.



VARIABLE SPEED CLUTCH PULLEYS
GOVERNOR CONTROLLED BRAKES

HORTON MFG. CO., INC.
MINNEAPOLIS 14, MINNESOTA

SAFETY NEWS

1959 Records Show 3-Per Cent Increase Over 1958

FOR THE SEVEN MONTHS ended July 31, 179 contestants reported perfect scores in the 1959 Paper Industry Safety Contest sponsored by the National Safety Council. The number of contestants registered in the competition is 447.

Last year's July record showed 171 perfect scores with a total of 680 registered contestants.

The January to July frequency rate for all divisions (except pulpwood logging) was 6.82, a 3-per cent increase from the same period in 1958. In the Pulp & Paper Division, the rate was 6.20, no change from a year ago. In the Paper Converting, a rate of 8.14 meant a 3-per cent decrease from last year. Pulpwood Logging reported a rate of 31.86, a 4-per cent decrease at the same time in 1958.

Contestants working the most manhours in the January-to-July period without lost-time accidents were: Kimberly-Clark Corp. of Niagara, Wis.; Consolidated Paper Corp. Ltd. (Belgo Div.), of Shawinigan Falls, Que.; Consolidated Paper Corp. Ltd. of Port Alfred, P.Q., Canada.

From the eligible mills in Division I the board of judges will choose the mill with the most outstanding record. This plant will be awarded the grand prize—the Edward Benton Fritz Memorial Trophy—during the National Safety Congress in October. The trophy is presented each year by the Fritz Publications Inc., publisher of The PAPER INDUSTRY.

Perfect scores recorded for the January-to-July period were as follows:

Division I—Pulp and Paper Mills

Group A

No perfect scores.

Group B

Kimberly Clark Corp., Niagara, Wis.; Crossett Paper Mills, Crossett, Ark.; Consolidated Paper Corp. Ltd.; (Belgo Div.) Shawinigan Falls, Que.; Consolidated Paper Corp. Ltd. (Port Alfred Div.), Port Alfred, Que.; Munising Paper Co., Munising, Mich.; Consolidated Paper Corp. Ltd. (Laurentide Div.), Grand Mere, P. Q.; Marinette Paper Co., Marinette, Wis.; Mosinee Paper Mills Co., Mosinee, Wis.; Mead Corp. (Escanaba Paper Div.), Escanaba, Mich.; Chesapeake Corp. of Virginia, West Point, Va.

TO REMIND YOU

The 47th National Safety Congress will be held at the Conrad Hilton Hotel in Chicago from October 19 through 23.

Group C

Bestwall Gypsum Co., Thorold, Ont.; MacMillan & Bloedel Ltd., Nanaimo, B. C.; Strathmore Paper Co., West Springfield, Mass.; Kimberly Clark Corp., Fullerton, Calif.; Container Corp. of America, Wabash, Ind.

Group D

Canadian Forest Products Ltd., Port Mellon, B.C.; Certain-Teed Products Corp., East St. Louis, Ill.; Congoleum Nairn Inc., Cedarhurst, Md.; United States Gypsum Co., Clark Township, N. J.; United States Gypsum Co., Oakmont, Pa.; American Can Co. (Marathon Div.), Ashland, Wis.; Crown Zellerbach Corp., Lebanon, Ore.; Hennepin Paper Co., Little Falls, Minn.

Flintkote Co., Lockport, N. Y.; New York & Pennsylvania Co. Inc., Willsboro, N. Y.; Crown Zellerbach (Gaylord Container Div.), Baltimore, Md.; Bestwell Gypsum Co., Pryor, Okla.; Strathmore Paper Co., Woronoco, Mass.; Container Corp. of America, Noblesville, Ind.

Group E

Johns-Manville Co. Ltd., Asbestos, Que.; Coos Bay Pulp Corp., Empire, Ore.; St. Regis Container Corp. (Muskingum Mill Div.), Coshocton, Ohio; Forest Fiber Products Co., Forest Grove, Ore.; Columbia Box Board Mills Inc., Wallomsac, N. Y.; Fibreboard Paper Products Corp., Sumner, Wash.; American Writing Paper Corp. (Albion Div.), Holyoke, Mass.; U. S. Gypsum Co., Oakmont, Pa.; Robertson Paper Box Co. Inc., Montville, Conn.

Continental Can Co. Inc. (Robert Gair Div.), Middleton, Ohio.; Flintkote Co., Little Ferry, N. J.; Rogers Corp., Rogers, Conn.; U. S. Gypsum Co., Gypsum, Ohio; Quaker Oats Co., Pekin, Ill.; Spruce Falls Power & Paper Co. Ltd., Kapuskasing, Ont.; Celotex Corp., Avery, Ohio; Riegel Paper Corp. (Hughsville Plant), Reigelsville, N. J.; Crown Zellerbach Corp. (Gaylord Container Div.), Dresden, Ohio; Banner Fibreboard Co., Wellsburg, West Va.

Container Corp. of America, Wilmington, Del.; Johns-Manville Corp., Tilton, N. H.; National Gypsum Co., Newburgh, N. Y.; International Paper Co., Livermore Falls, Me.; International Paper Co., Riley, Me.; Rogers Corp., Manchester, Conn.; American Writing Paper Corp. (Mt. Tom Div.), Holyoke, Mass.; Container Corp. of America (Western Container Div.), Tacoma, Wash.

Division II—Paper Converting

Paper Bags

St. Regis Paper Co., Nazareth, Pa.; Thilmany Pulp & Paper Co., Kaukauna, Wis.; St. Regis Paper Co. Ltd., Vancouver, B. C.; St. Regis Paper Co., San Leandro, Calif.; Pillsbury Mills Inc., Wellsburg, W. Va.; St. Regis Paper Co., Playa Ponce, P. R.

Boxes and Cartons

Group A

Crown Zellerbach Corp. (Gaylord Container Corp. Div.) Baltimore, Ohio; General Foods Corp. (Carton & Container Div.), Battle Creek, Mich.; New Haven Board & Carton Co., Illchester, Md.; Great Lakes Box Co., Cleveland, Ohio; Container Corp. of America, Boston, Mass.; Container Corp. of America, Valley Forge, Pa.;

MARKET QUOTATIONS

RAGS (Domestic)

New Cotton Cuttings

The following are brokers' and large dealers' average buying prices for sizeable lots in cents per pound f.o.b. New York:

	per cwt.	
No. 1 white shirt cuttings	13.00—	13.50
Soft unbleached muslins	15.50—	16.00
Fancy shirt cuttings	4.50—	5.00
No. 1 percales	5.50—	6.00
No. 1 washables	2.25—	2.50
No. 1 light silesias	6.50—	7.00
No. 1 light prints	4.75—	5.00
Light flannelettes	6.50—	7.00
Cottonades	2.75—	3.25
Blue overall cuttings	6.75—	7.25
Blue cheviots	6.75—	7.25
Canton flannels, bleached	10.50—	11.00
Canton flannels, unbleached	10.50—	11.00
Osnaburg cuttings	9.50—	10.50
Underwear cuts, bleached	14.50—	15.00
Underwear cuts, unbleached	14.50—	15.00
Sun tan khaki cuttings	5.00—	5.50
American linen cuttings	6.75—	7.25

Cotton Rags

The following are prices, cents per pound, paid by dealers and brokers f.o.b. New York:

	per cwt.	
No. 1 roofing (Chicago)	.80—	.85
No. 2 roofing (Chicago)	.70—	.75
Twos and blues, repacked	1.50—	1.75
Thirds and blues, repacked	1.50—	1.75
No. 1 whites, repacked	—	
No. 1 whites miscellaneous	—	
No. 2 whites, repacked	—	
No. 2 whites, miscellaneous	—	

RAGS (Foreign)

(ex dock New York City)

New Rags

	per cwt.
New dark cuttings	Nominal
New mixed cuttings	
New light silesias	
Light flannelettes	
Unbleached cuttings	
New white cuttings	
New light oxfords	
New light prints	

Old Rags

	per cwt.
No. 1 white linens	Nominal
No. 2 white linens	
No. 3 white linens	
No. 4 white linens	
No. 1 white cottons	
No. 2 white cottons	
No. 3 white cottons	
No. 4 white cottons	
Extra light prints	
Ordinary light printe	
Medium light prints	
Dutch blue cottons	
French blue cottons	
French blue linens	
Checks and blues	
Linsey garments	
Dark cottons	
Old shopperies	

ROPE and BAGGING

F.o.b. and ex dock New York City

Gunny No. 1, domestic	—
Gunny No. 1, foreign	—
No. 1 manila rope, domestic	—
No. 1 manila rope, foreign	—
New burlap cuts (soft)	—
Sisal strings	—
Mixed strings	—

WASTE PAPER

The following are prices, dollars per net ton, paid by brokers and large dealers for carload quantities of baled stock, f.o.b. cars New York:

No. 1 hard white envelope cuttings	90.00—	95.00
No. 1 hard white shavings	75.00—	80.00
No. 1 soft white shavings	50.00—	55.00
Soft white shavings, uncoated	60.00—	65.00
Fly leaf shavings No. 1	30.00—	35.00
Fly leaf, woody, No. 1	25.00—	27.50
Mixed colored shavings	21.00—	23.00
No. 1 books and magazines	26.50—	27.50
Ledger stock, white, No. 1	52.50—	55.00
Ledger stock colored, No. 1 (Midwest ship)	40.00—	
New manila envelope cuttings (free of groundwood)	70.00—	75.00
New manila envelope cuttings (containing groundwood)	50.00—	55.00
Manila tab cards	75.00—	80.00
Colored tab cards	55.00—	60.00
New northern kraft envelope cuttings	65.00—	70.00
Triple sorted kraft, 100%	35.00—	37.00
No. 1 old kraft	30.00—	
White news cuts, No. 1	60.00—	65.00
No. 1 overissue news	20.00—	22.00
Folded news, special	18.00—	19.00
Folded news, ordinary	16.00—	17.00
Old corrugated boxes	22.00—	23.00
New jute corrugated cuts	19.00—	20.00
Mill wrappers	11.00—	13.00
Boxboard cuttings	7.00—	9.00
No. 1 mixed paper	12.00—	13.00

CHEMICALS

F.o.b. New York City

Alum, ammonium		
Granular, bags, works, cwt.	4.30—	
Lump, drums, works, cwt.	5.05—	
Powdered, drums, works, cwt.	5.20—	
1-Arginine, drums, kilo	90.00—	
Blanc Fixe		
Direct process, bags, c.l., works, ton	145.00—	
L. c. l., ton	155.00—	
Bleaching Powder, drums, cwt.	—	
Casein, domestic acid precipitated		
30-mesh bags, 10,000-lb. lots or more, shipping point, lb.	.56—	
80-mesh bags, 10,000-lb. lots or more, shipping point, lb.	.64—	
China Clay, domestic dry-ground, airfloat, 99%		
325-mesh bags, c.l., Georgia works, ton	10.00—	12.00
300-mesh bags, c.l., Georgia works, ton	13.50—	14.50
Imported, white, lump, bulk, c. l., ex dock Phila, Portland, Me., gross ton	20.00—	35.00
Chlorine, liquid		
Tanks, single units, works, freight equaled, cwt.	3.15—	
Glycerine, refined (CP, USP) 99%, drums c. l., delivered lb.	.29½—	
Litharge, commercial powdered		
Barrels, c. l., works, freight equaled lb.	.14¾—	
Rosin, gum, c. l., f.o.b. New York, cwt.		
K, M	10.60—	
N	10.75—	
WG	10.90—	
WW	11.15—	
Rosin, wood, c. l., f.o.b., shipping point, cwt.		
K, M	8.75—	
N	8.95—	
WG	9.15—	
WW	9.45—	
Saltcake, domestic, bulk works, 100% Na_2SO_4, basis ton	28.00—	
Soda Ash		
Dense, 58%, paper bags, c.l. works, cwt	1.90—	
Light, 58%, paper bags, c.l. works, cwt	1.85—	
Soda, caustic		
Flake, 76%, drums, c. l. works, freight equalled, cwt	5.20—	
Solid, 76%, drums, c. l. works, cwt.	4.80—	
Sodium Silicate		
40°Be, 1:3.2, turbid, drums, c. l., works, cwt.	1.55—	
52°Be, turbid, 1:2.4, drums, c. l., works, cwt.	2.65—	
Starch		
Pearl, 140-lb. bags, cwt.	7.51—	
Pearl, 100-lb. bags, cwt.	7.36—	
Powdered, 100-lb. paper bags, cwt.	7.48—	
Sulfur, crude		
Bulk, c. l. mine, contract, long ton	23.50—	
Talc		
Domestic, fibrous, N. Y., grd., bags, c. l. works, ton	28.00—	
Canadian, ground, bags, c. l. works, ton	20.00—	35.00
Titanium Pigment		
Calcium-rutile base, regular, bags, c. l., lb.	.09⅜—	
High-tinting, drums, c. l., lb.	.14⅜—	
Zinc Oxide Pigment, American process		
Lead-free, bags, c. l. freight allowed, lb.	.14½—	
Leaded, 35%, bags, c. l., freight allowed, lb.	.15⅛—	

WOOD PULP

Quotations on domestic and Canadian pulp, dollars per short air-dry ton delivered consuming mills including basic allowances, follow:

Bleached sulfite, No. 1	155.00—
Bleached sulfite, Canadian	155.00—
Unbleached sulfite	135.00—
Unbleached sulfite, Canadian	135.00—
Bleached soda	150.00—
Bleached soda, Canadian	150.00—
Kraft, bleached hardwood	152.00—
Kraft, bleached	157.00—
Kraft, bleached southern	160.00—
Kraft, bleached Canadian	160.00—162.50
Kraft, unbleached southern	120.00—
Kraft, unbleached, Far West	125.00—
Kraft, unbleached Canadian eastern	135.00—
Kraft, unbleached Canadian western	120.00—125.00
Kraft, semi-bleached southern	140.00—
Sulfite screenings	—
Sulfate screenings	—

Quotations on imported wood pulp, dollars per short air-dry ton on dock American Atlantic ports, follow:

Bleached sulfite Swedish, freight allowed	155.00—
Bleached sulfite, Norwegian, del'd with limited freight allowance	155.00—
Bleached sulfite, Finnish, freight allowed	155.00—
Unbleached sulfite, Swedish, freight allowed	135.00—
Unbleached sulfite, Finnish, freight allowed	135.00—
Kraft, unbleached, Swedish, freight allowed	125.00—
Kraft, unbleached, Finnish, freight allowed	125.00—
Kraft, bleached, Swedish, on dock	157.50—162.50
Kraft, bleached, Norwegian	155.00—

PAPER

Quotations are mill quotations Chicago

Boards (prices per ton, delivered in Chicago, 10 tons or more):	
Plain chip	107.50
News vat lined chip	110.00
.009 chip, rolls	100 00
Filled news	111.50
Solid news	114.50
White vat lined chip	144.50
Chip tube and can stock	112.50
Single manila lined chip	162.50
Single jute lined chip	147.50
Container, 42-lb.	
Kraft liner (per 1000 sq. ft.)	2.68
White patent coated	
.020	175.00
.018	177.50
.016	182.50

Book Paper (f.o.b. Chicago, c.l. cases per cwt):	
No. 1 enamels	20.55
No. 2 enamels	19.55
Machine-coated, 45- to 100-lb.	15.55— 19.00
60-lb. + uncoated offset, 25 × 38 (2000 lb.)	22.25
"A" grade English finish untrimmed, 25 × 38 (2000 lb.)	21.10

Rag Content Bond (white, 5000 to 10,000-lb. sub 20, ream sealed cartons):	per cwt
100% rag	—
75% "	—
50% "	—
25% "	—

Rag Content Ledger (white, 5000 to 10,000 lb., ream sealed cartons):	
100% rag	—
75% "	—
50% "	—
25% "	—

Sulfite Bond (white, 5000 to 10,000-lb. sub 20, ream sealed cartons):	
No. 1	—
No. 2	—
No. 4	—

Sulfite Ledger (white, 5000 to 10,000-lb., ream sealed cartons):	
No. 1	—
No. 2	—
No. 4	—

Newsprint (contract base price)	per ton
Rolls, standard	135.00
Sheets — Standard differentials	

Kraft Wrapping — Natural (standard rolls 9- and 15-in. diam.)	per cwt
70-lb. and heavier	8.75
60-lb.	9.00
50-lb.	9.25
40-lb.	9.50
35-lb.	10.00
30-lb.	10.75
25-lb.	11.50
20-lb.	12.50

No. 1 Kraft Butcher — Pink	per cwt
40-lb. only	10.25

(Sheets — Plus 50c cwt)

POSTERS — A POTENT SAFETY TOOL

Posters should be one of the top aids in your safety program. No other safety medium can reach your entire audience—not once, but many times each day—with such low-cost safety messages. They are directed at the worker acts and worker attitudes that lead to accidents. Posters lend *timeliness, repetition and continuity* to your safety program . . . the three fundamental principles of direct selling.

The National Safety Council maintains a stock of posters that covers all industries, operations and phases of safety and health. These posters are produced in two sizes: "A" size, 8½"x 11½", and "B" size, 17x23". Their colorful illustrations and eye-catching captions make them ideal for the mass selling of safety.

Write for a free copy of the Directory of Occupational Safety Posters. This 72 page catalog illustrates 744 posters, indexed and classified for specific operations.

NATIONAL SAFETY COUNCIL
425 N. Michigan Ave.
Chicago 11, Illinois

Safety . . .

Container Corp. of America, Arlington; Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.

Group B

Hankins Container Co., Union, N. J.; Olin Mathieson Chemical Corp. Cincinnati, Ohio; Crown Zellerbach Corp. (Gaylord Container Corp. Div.), Milwaukee, Wis.; International Paper Co., Kalamazoo, Mich.; Superior Paper Products Co. Inc., York, Pa.; Container Corp. of America, Chattanooga, Tenn.; Pollock Paper Corp. (Folding Box Plant), Dallas, Texas; International Paper Co., Kansas City, Kansas; Container Corp. of America (Boyle Ave.), Los Angeles; Owens-Illinois Glass Co. (Mill Div.), Jacksonville, Fla.; Owens-Illinois Glass Co., Los Angeles.

Dairypak Inc., Athens, Ga.; Owens-Illinois Glass Co., Bradford, Penn.; Crown Zellerbach Corp. (Gaylord Container Corp. Div.), St. Louis, Mo.; Mengel Co., Winston Salem, N. Carolina; Container Corp. of America, Santa Clara, Calif., Owens-Illinois Glass Co., Salisbury, N. C.; Container Corp of America Fernandina Beach Fla.; Crowell Corp., Marshall, Mich.; Owens-Illinois Glass Co. (Aurora Box Div.).

Container Corp. of America, Chattanooga, Tenn.; Owens-Illinois Glass Co. (Atlanta Box Div.); International Paper Co., San Jose, Calif.; Container Corp. of America, Baltimore, Md.; Hankins Container Co., Little Rock, Ark.; Wilson Paper Co. Inc., Richmond, Va.; Hunt Crawford Co., Coshocton, Ohio; Weyerhaeuser Timber Co. (Kieckhefer-Eddy Div.), St. Louis; Weyerhaeuser Timber Co. (Kieckhefer-Eddy Div.), Detroit.

Container Corp. of America, Boston; Container Corp. of America, Muskogee, Okla.; Dairypak Inc., Cleveland, Ohio; International Paper Co., Bastrop, La.; American Can Co. (Marathon Div.,), Newnan, Ga.; Container Corp. of America, Renton, Wash.; Fort Wayne Corrugated Paper Co., Pittsburgh, Penn.; Olin Mathieson Chemical Corp., West Monroe, La.; Pollock Paper Corp., Dallas, Texas; Longview Fibre Co., Seattle, Wash.; Container Corp. of America, Portland, Ore.; Weyerhaeuser Timber Co. (Kieckhefer-Eddy Div.), Bellville, Ill.; Owens-Illinois Glass Co., Dallas, Texas.

St. Regis Paper Co. (Niagara Carton Container Div.), Buffalo, N. Y.; Crown Zellerbach Corp. (Gaylord Container Div.), Plymouth; International Paper Co. (Single Service Div.), Waco, Texas; International Paper Co., Geneva, N. Y.; Weyerhaeuser Timber Co. (Kieckhefer-Eddy Div.), Hastings, Neb.; Weyerhaeuser Timber Co. (Kieckhefer-Eddy Div.), Garland; Weyerhaeuser Timber Co. (Kieckhefer-Eddy Div.), V, Washington; Weyerhaeuser Timber Co. (Kieckhefer-Eddy Div.), Seymour, Ind.; Fibreboard Paper Products Co. San Joaquin, Calif.; International Paper Co., Auburndale, Fla.; Weyerhaeuser Timber Co. (Kieckhefer-Eddy Div.), Carpentersville, Ill.; International Paper Co., Houston, Texas; Container Corp. of America, Sioux City, Iowa; Fibreboard Paper Products Co. Denver, Colo.

Roofing Paper

United States Gypsum Co., South Gate, Calif.; Ruberoid Co., Gloucester City, N. J.; Ruberoid Co., Dallas, Texas; Ruberoid Co., Savannah, Ga.; Bird & Son Inc., Charleston, S. Carolina; Ruberoid Co., Erie, Pa.; Certain-Teed Products Corp., Dallas, Texas; Ruberoid Co., Millis, Mass.; Murray Brantford Roofing Co., Ont.; Celotex Corp., Cleveland, Ohio; Canadian Gypsum Co. Ltd., Mt. Dennis, Pl.; Johns-Manville Corp., Marrero, La.; United States Gypsum Co., St. Paul; Ruberoid Co., Baltimore, Md.; Ruberoid Co., Denver, Colo.; Fiberboard Paper Products Co., Portland, Ore.; Fibreboard Paper Products Co., Wilmington, Calif.; Certain-Teed Products Corp., Tacoma, Washington; Murray Brantford Roofing Co., Lachine.

Insulation and Building Board

National Gypsum Co., Mobile, Ala.; United States Gypsum Co., Greenville, Miss.; Canadian Johns-Manville Co. Ltd., N. Bay, Ont.; United States Gypsum Co., Lisbon Falls, Me.

Specialties

Crown Zellerbach Corp. (Western Waxide Div.), Los Angeles, Calif.; Orchard Paper Co., St. Louis, Mo.; St. Regis Paper Co., Kalamazoo, Mich.; Crown Zellerbach Corp. (Western Waxide Div.), St. Louis; Gummed Products Co., Troy, Ohio; Scott Paper Co. (Cut-Rite Div.), Sandusky, Ohio; Kimberly Clark Corp., Appleton, Wis.; Kimberly Clark Corp., Winnipeg, Man.; Crown Zellerbach (Western Waxide Div.), Kansas City, Kansas; Container Corp. of America, Jefferson, Ind.; Lily Tulip Cup Corp., Galva, Ill.; Lily Tulip Cup Corp., Monticello, Ind.; Pollock Paper Corp., Houston, Texas; Lily Tulip Cup Corp., Chicago, Ill.

Division III—Pulpwood Logging

No perfect scores.

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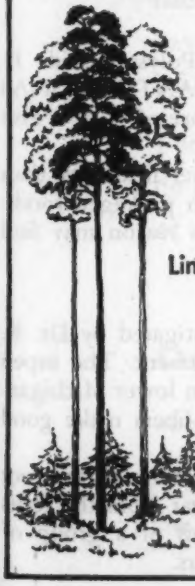
WILLIAMS-GRAY COMPANY

221 North LaSalle Street
Chicago 1, Illinois

WILLIAMS-GRAY COMPANY
Serving the Paper Industry
1906



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PAPER INDUSTRY

Whither?

... in production, processes, new products, markets

Urethan foams for insulation and as a corrosion preventative

A method for spraying urethan foams has been developed by Wyandotte Chemicals to provide effective insulation for process equipment or to protect the latter from corrosion. The foam, which is self-adhering and dries in the course of 5 minutes, can be applied to either smooth or irregular surfaces. It produces a continuous coating which is resistant to weathering and chemical action.

Thermal conductivity of the foam (2 lb. per cu. ft.) is about 0.14 compared to more than 0.2 for such insulation materials as glass fibers, cork, or expanded polystyrene.

Navy scientists develop dry film lubricant

A dry film lubricant for ball bearings has been developed by scientists of the Naval Air Material Center. The film, composed of 55 per cent molybdenum disulfide, 6 per cent graphite and 39 per cent sodium silicate, has good stability through a temperature range of —300°F. to 750°F. Tests have shown that bearings could be run on this lubricant without failure for 240 hrs. at 350°F. and 1250 rpm.

USDA discovers plant growth factor

A blue pigment which exists in two forms — i.e. red light absorbing and far-red light absorbing — has been found in plants by USDA scientists. The pigment is a protein and acts like an enzyme in controlling plant growth. The discovery may mean better control of plant development for specific purposes such as better food, fiber and other industrial raw materials.

In the red light absorbing form the pigment prevents flowering in some plants or elongation of stems in others and promotes germination in some seeds, etc. In the far-red absorbing form it seems to nullify or reverse all plant actions which it initiates in the red light absorbing form.

Polysaccharide B-1459—a new gum

USDA scientists have obtained a new synthetic gum (Polysaccharide B-1459) by fermenting glucose with a plant pathogen, XANTHOMONAS CAMPESTRIS. The gum's viscosity increases in the presence of salts. It also shows considerable heat stability in the presence of salts.

The gum is film forming — the film having a higher flexibility than corn amylose films which are used in edible wrappings for packaged foods.

The new gum dissolves easily in water and for this reason may find use as a dispersing and suspending agent.

Spotlight on the aspen

The root systems of the aspen will be thoroughly investigated by Dr. R. Zahner of the University of Michigan's Forestry Department. The aspen is believed to be the single most important forest species in lower Michigan. It grows several times faster than the pine tree and its fibers make good paper.

Its intriguing characteristic is that it regenerates itself through the root suckers, so that, if the main stem is cut, new stems appear from the roots nearby. The function of the interconnected root systems of a group of aspen trees will be studied by means of radioactive tracers.

an Invitation to PAPER COATERS

to explore
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as the adhesive in paper coating

ANIMAL GLUE, once used as the adhesive in paper coatings, is back in the picture. Improved glue qualities and new coating formulations have shown definite advantages—substantiated by laboratory evaluation, a full-scale paper mill trial, and actual printing tests.

For a more detailed announcement of this development (printed on glue-coated paper), a technical bulletin describing the method used, or samples of DARLING's coating grade glue, write:

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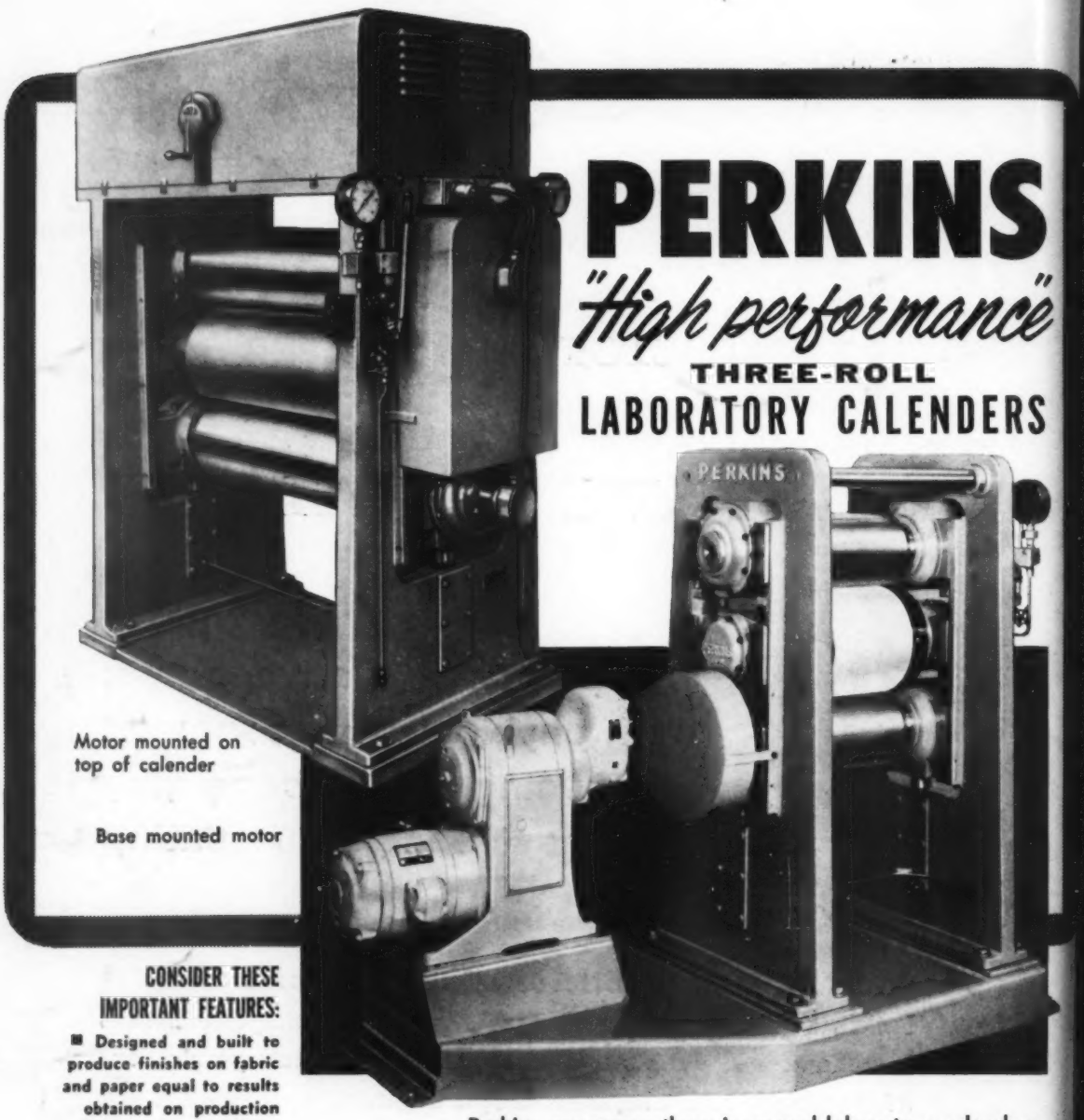

Motor mounted on top of calender

Base mounted motor

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